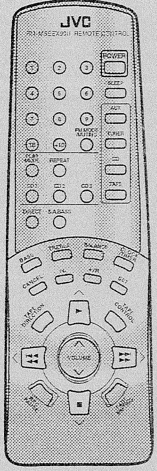
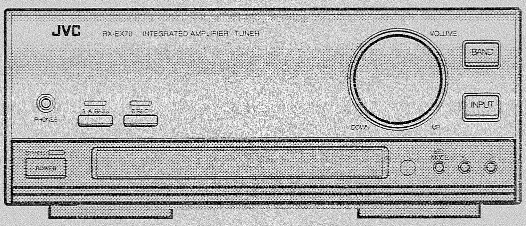
JVC

SERVICE MANUAL

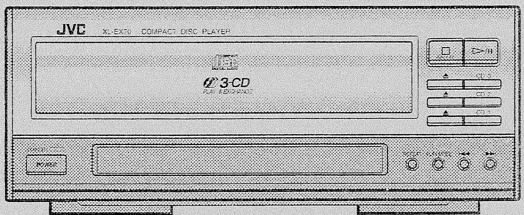
COMPACT COMPONENT SYSTEM

CA-EX70
CA-EX70R




JVC
RX-EX70 INTEGRATED AMPLIFIER / TUNER
VOLUME
BAND
INPUT
PHONES
S.A.BASS
DIRECT
DOWN
UP
POWER

RX-EX70


JVC
XL-EX70 COMPACT DISC PLAYER
3-CD
POWER

XL-EX70

COMPACT disc DIGITAL AUDIO

Area Suffix

C ------------ Canada
J ------------ U.S.A.
U ----------- Other Areas
UB ----------- Hong Kong
UF ---------- China
US ---------- Singapore
UT ----------- Taiwan
B ------------ U.K
E ---------- Continental Europe
EN ------ Northan Europe
EE ------- Eastern Europe

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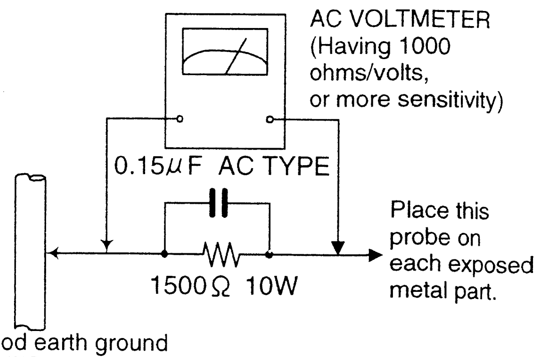
No.20703
Jun.1998

Safety Precautions

1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet , particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.)
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground.
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now reverse the plug in the AC outlet and repeat each measurement voltage measured any must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).

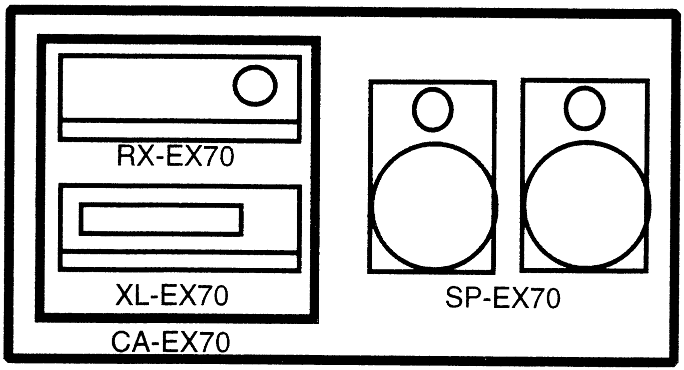
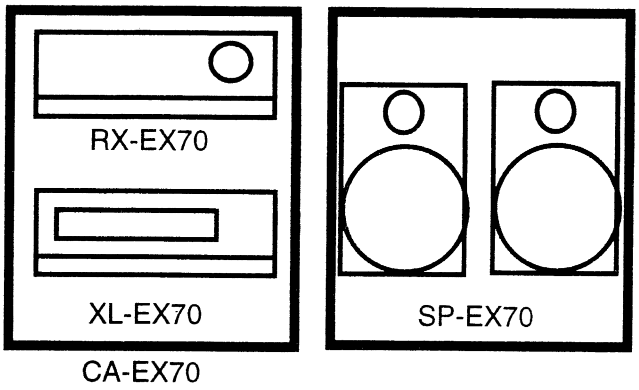
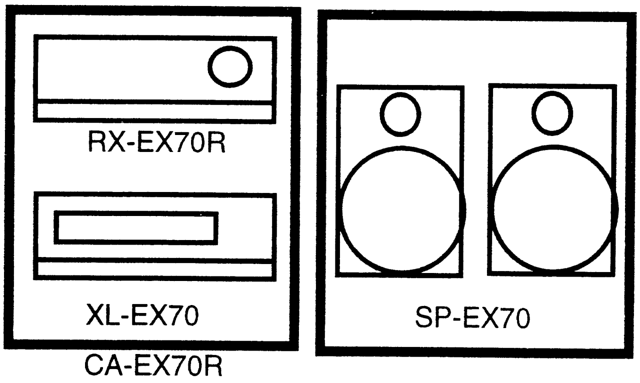
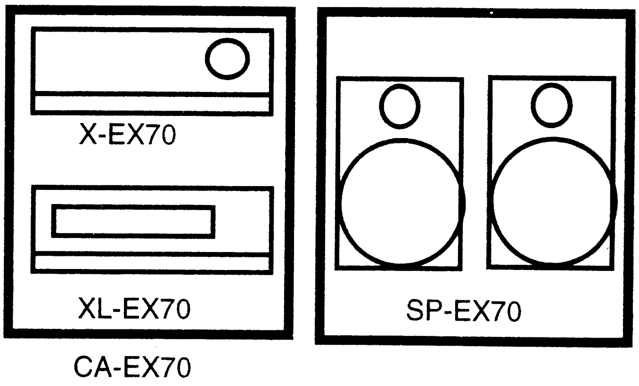

AC VOLTMETER
(Having 1000 ohms/volts, or more sensitivity)
0.15μF AC TYPE
1500Ω 10W
Place this probe on each exposed metal part.
Good earth ground

Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

⚠ ***CAUTION*** **Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.**

COMPACT COMPONENT SYSTEM UNIT CONSTRUTION

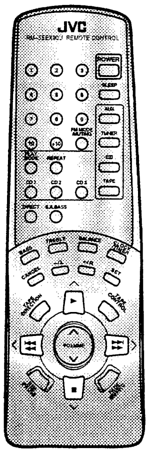
VERSION	UNIT CONSTRUCTION
J	 RX-EX70 XL-EX70 CA-EX70 SP-EX70
C	 RX-EX70 XL-EX70 CA-EX70 SP-EX70
B,E,EN,EE	 RX-EX70R XL-EX70 CA-EX70R SP-EX70
U,UF,UT US,UB	 X-EX70 XL-EX70 CA-EX70 SP-EX70

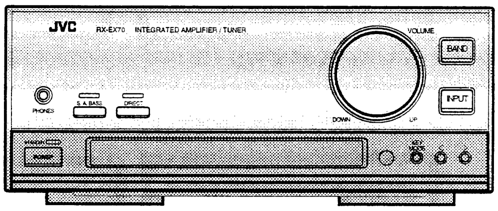
JVC

COMPACT COMPONENT SYSTEM

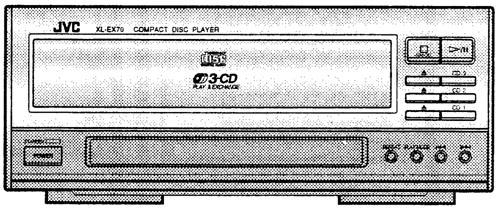
CA-EX70

Consists of RX-EX70 and XL-EX70.




JVC
RX-EX70 INTEGRATED AMPLIFIER / TUNER
VOLUME
BAND
INPUT
PHONES
S.A.BASS
DIRECT

INTEGRATED AMPLIFIER/TUNER RX-EX70


JVC
XL-EX70 COMPACT DISC PLAYER
3-CD
PLAY & EXCHANGE

COMPACT DISC PLAYER XL-EX70

COMPACT
disc
DIGITAL AUDIO

INSTRUCTIONS

For Customer Use:
Enter below the Model No. and Serial No. which are located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No. ____________________

Serial No. ____________________

LVT0092-001A
[J]

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Welcome !

We would like to thank you for purchasing one of our JVC products. Before connecting this unit to the wall outlet, please read the instructions carefully to ensure that you obtain the best possible performance. If you have any questions, please consult your JVC dealer.

Important cautions

Installation of the Unit

- Select a place which is level, dry and neither too hot nor too cold (Between 41˚F-95˚F or 5˚C and 35˚C).
- Leave sufficient distance between the Unit and a TV.
- Be sure to place the Unit in a location with good ventilation.
- Do not use the Unit in a place subject to vibrations.
- Do not place the Unit on a carpet.
- Do not place the Unit on top of another heat-generating piece of equipment.

Power cord

- Do not handle the power cord with wet hands!
- When unplugging the Unit from the wall outlet, always pull the plug, not the power cord.

Malfunctions, etc.

- There are no user serviceable parts inside. If anything goes wrong, turn off the power immediately. If the same problem reoccurs when the power is turned on once more, turn off the power again, unplug the power cord and consult your dealer.
- Do not insert any metallic object into the Unit.

For safe use, observe the following

Avoid moisture, water and dust

Do not set your machine in moist or dusty places.

Avoid high temperatures

Do not expose your machine to direct sunlight or set near a heating device.

Do not block the vents

Poor-ventilation may damage your machine. So do not block the vents or put the unit in a poorly ventilated place.

When you're away

When away on travel or otherwise for an extended period of time, turn off the power and pull the plug from the electrical socket.

Do not insert foreign matter into the machine

Do not insert wires, hairpins, coins, etc. into your machine.

Care of the cabinet

When cleaning your machine, use a soft cloth and follow the relevant instructions on the use of chemically-coated cloths. Avoid applying benzene, thinner or other organic solvents and disinfectants. This may cause deformation or discoloring.

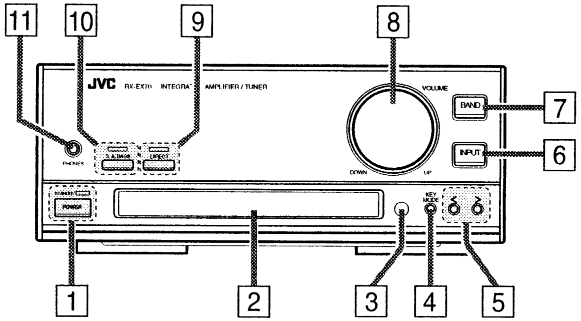
If water gets inside the machine

Turn off the power and pull the plug from the electrical socket, then call the store where you made your purchase. Using the machine in this state may cause a fire or electrical shock.

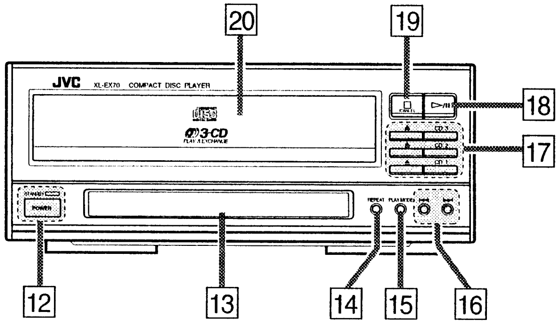
Parts Index

Front Panels

Amplifier/tuner


11
10
9
8
JVC
RX-EX70 INTEGRATED AMPLIFIER / TUNER
VOLUME
BAND
INPUT
PHONES
S.A.BASS
DIRECT
DOWN
UP
STANDBY
POWER
KEY MODE
7
6
1
2
3
4
5

CD player


20
19
JVC
XL-EX70 COMPACT DISC PLAYER
3-CD
PLAY & EXCHANGE
CANCEL
CD 3
CD 2
CD 1
STANDBY
POWER
REPEAT
PLAY MODE
18
17
12
13
14
15
16

Amplifier/tuner front panel

1 **POWER button**
Press to switch the power between ON and STANDBY.
STANDBY indicator
Lights up when the power is in STANDBY mode. Turns off when power is ON.

2 **Display**

3 **Remote sensor**

4 **KEY MODE button**
Press to switch the operation mode of the < and > (cursor) buttons.
The PRESET indicator in the display lights in the preset tuning mode.
The PRESET indicator in the display turns off in the auto/manual tuning mode.

5 **<, > (Cursor buttons)**
Press to switch preset channels or for auto/manual tuning.

6 **INPUT button**
Press repeatedly to select the desired input source.

7 **BAND button**
Press to switch between the FM and AM radio bands.

8 **VOLUME control**
Rotate to adjust the volume.
Rotating toward UP increases the volume and toward DOWN decreases it.

9 **DIRECT button and indicator**
Press to turn the direct signal function on or off. This function allows the source signal to bypass the tone control circuitry (BASS, TREBLE, S.A. BASS, and BALANCE) during playback. The indicator lights up when this function is on.

10 **S.A. BASS button and indicator**
Press to turn the bass enhancement function on or off. The indicator lights up when this function is on.

11 **PHONES jack**
Connect headphones with a stereo mini-plug to this jack. No sound comes from the speakers when headphones are connected.

CD player front panel

12 **POWER button**
Press to switch the power between ON and STANDBY.
STANDBY indicator
Lights up when the power is in the STANDBY mode. Turns off when power is ON.

13 **Display**

14 **REPEAT button**
Press to switch repeat play modes (All disc repeat, 1 disc repeat, 1 track repeat or off).

15 **PLAY MODE button**
Press to switch play modes (continuous play, Program play, or Random play).

16 **|◀◀, ▶▶| buttons**
Press to skip to the beginning of a desired track or press and hold to search in fast forward or fast reverse.

17 **Disc control buttons**
▲: Press to open or close the respective disc tray.
CD 1 to CD 3: Press to start playing the respective CD.

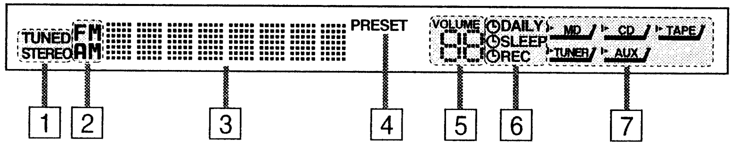
18 **▷/II button**
Press to start or pause CD playback.

19 **□/CANCEL button**
Press to stop CD playback.
Press to clear a track during program mode.

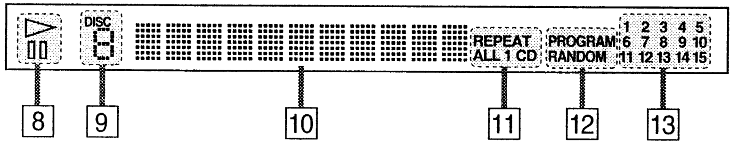
20 **Main tray**
This accommodates three disc trays inside.

Displays

Amplifier/tuner



CD player



Amplifier/tuner display

[1] **Receiving condition indicators**
TUNED: Lights up when radio broadcast is received.
STEREO: Lights up when FM stereo broadcast is received.

[2] **Receiving band indicators**
FM: Lights up when the FM band is selected.
AM: Lights up when the AM band is selected.

[3] **Character display**
Shows the selected source, radio frequency, preset channel number, timer setting item and contents.
Shows the clock in the power STANDBY mode.

[4] **PRESET indicator**
Lights up when < and > (cursor buttons) are set to the preset channel selection mode.

[5] **Volume indicator**
Shows the volume level.

[6] **Timer indicators**
- DAILY: Lights up when the daily timer operation is selected.
- SLEEP: Lights up when the sleep timer operation is selected.
- REC: Lights up when the recording timer operation is selected.

[7] **Source indicators**
The "▸" marking on the left of the selected source lights up.

CD player display

[8] **Play indicators**
▷: Lights up during CD playback.
▯▯: Lights up during pause.

[9] **Disc indicator**
Shows the CD disc number being played or selected.

[10] **Character display**
Shows the track number, play time, program sequence, etc.

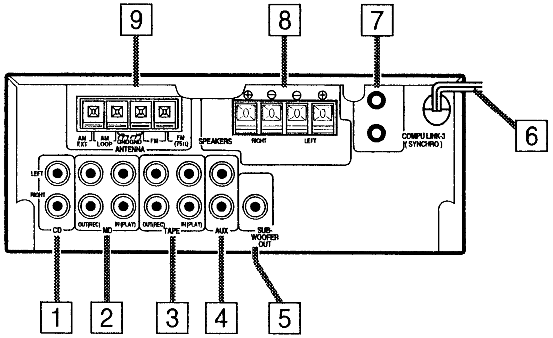
[11] **Repeat mode indicators**
Show the repeat mode.
REPEAT ALL: Lights up when all tracks in all the CDs loaded in the main tray or all tracks in the program are played repeatedly.
REPEAT 1 CD: Lights up when a CD is played repeatedly.
REPEAT 1: Lights up when a single track is played repeatedly.

[12] **Play mode indicators**
PROGRAM: Lights up in the program play mode.
RANDOM: Lights up in the random play mode.

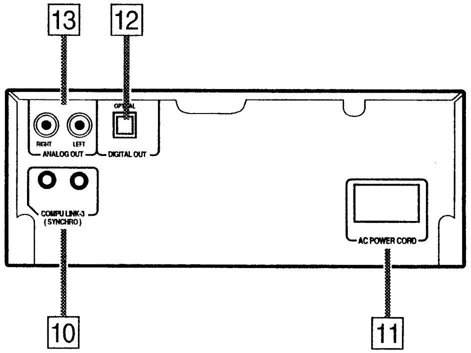
[13] **Track indicators**
Shows the number of tracks in the selected or played CD.

Rear Panels

Amplifier/tuner


9
8
7
6
AM EXT
AM LOOP
GND GND
FM
FM (75Ω)
ANTENNA
SPEAKERS
RIGHT
LEFT
COMPU LINK-3 (SYNCHRO)
LEFT
RIGHT
CD
OUT(REC)
IN(PLAY)
MD
OUT(REC)
IN(PLAY)
TAPE
AUX
SUB-WOOFER OUT
1
2
3
4
5

CD player


13
12
OPTICAL
RIGHT
LEFT
ANALOG OUT
DIGITAL OUT
COMPU LINK-3 (SYNCHRO)
AC POWER CORD
10
11

Amplifier/tuner rear panel

1. **CD input jacks**
   Connect to the ANALOG OUT jacks of the CD player.
2. **MD input/output jacks**
   Connect to the output/input jacks of the MD recorder.
   OUT (REC): Connect to the IN (REC) jacks of the MD recorder.
   IN (PLAY): Connect to the OUT (PLAY) jacks of the MD recorder.
3. **TAPE input/output jacks**
   Connect to the output/input jacks of the cassette deck.
   OUT (REC): Connect to the IN (REC) jacks of the cassette deck.
   IN (PLAY): Connect to the OUT (PLAY) jacks of the cassette deck.
4. **AUX input jacks**
   Connect to the audio output jacks of a VCR or TV.
5. **SUB-WOOFER OUT jack**
   Connect to the input jack of a subwoofer amplifier or powered subwoofer.
6. **Power cord**
   Connect to a wall power outlet.
7. **COMPU LINK-3 (SYNCHRO) jacks**
   Connect each jack with the COMPU LINK-3 (SYNCHRO) jack of another component. Either jack can be used for the connection.
8. **SPEAKERS terminals**
   Connect speakers with rated impedance of 6 to 16 ohms.
9. **ANTENNA terminals**
   Connect the FM and AM antennas.

CD player rear panel

10. **COMPU LINK-3 (SYNCHRO) jacks**
    Connect each jack with the COMPU LINK-3 (SYNCHRO) jack of another component. Either jack can be used for the connection.
11. **AC POWER CORD receptacle**
    Connect the provided AC power cord.
12. **DIGITAL OUT jack**
    Connect to the DIGITAL IN jack of the MD recorder using an optical digital cable. When connecting to the XM-EX90 MD recorder, connect to its DIGITAL IN 1 jack.
13. **ANALOG OUT jacks**
    Connect to the CD input jacks on the amplifier/tuner using the provided audio pin cord.

9 **TAPE DIRECTION**
Press to change the tape direction when using the cassette deck.

10 **⏮ ◀◀ (skip back) / <**
- Press to skip or search backward on the CD player after pressing CD, CD1, CD2, CD3, or PLAY MODE.
- Press to rewind on the cassette deck after pressing TAPE or TAPE CONTROL.
- Press to select the preset channel after pressing TUNER.

11 **REC PAUSE**
Press to set the cassette deck to record pause mode.

12 **■ (stop) / v**
- Press to stop playback on the CD player after pressing CD, CD1, CD2, CD3, or PLAY MODE.
- Press to stop playback or recording on the cassette deck after pressing TAPE or TAPE CONTROL.
- Press to tune manually to a lower frequency after pressing TUNER.

13 **VOLUME**
Press ʌ (up) to increase the volume.
Press v (down) to decreases the volume.

14 **FADE MUTING**
Press to turn the volume all the way down.
To restore the volume, press it again.

15 **⏭ ▶▶ (skip forward) / >**
- Press to skip or search forward on the CD player after pressing CD,CD1,CD2,CD3, or PLAY MODE.
- Press to fastforward on the tape deck after pressing TAPE or TAPE CONTROL.
- Press to select the preset channel after pressing TUNER.

16 **▶ (play) / ʌ**
- Press to start playback on the CD player after pressing CD, CD1, CD2, CD3 or PLAY MODE.
- Press to start playback on the cassette deck after pressing TAPE or TAPE CONTROL.
- Press to automatically tune to higher frequencies after pressing TUNER.

17 **TAPE CONTROL**
Press to set the buttons on the remote to operate the cassette deck.

18 **SET**
Press to set the preset channel, timer, clock, etc.

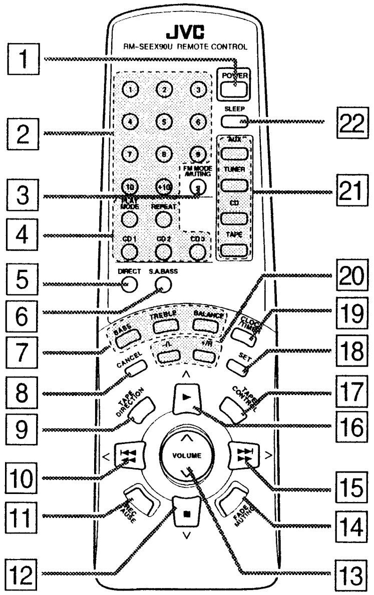
19 **CLOCK/TIMER**
Press to set the timer or clock.

20 **+/R, –/L**
Press to set the BASS level, TREBLE level, BALANCE, timer, clock, etc.

21 **Source buttons**
AUX: press to select the component connected to the amplifier/tuner's AUX jacks as the sound source.
TUNER: press to select the tuner as the sound source and set some buttons on the remote to operate the tuner. Press repeatedly to switch the band (FM or AM).
CD: press to select the CD player as the sound source and make it start playback of a loaded CD. Press to set some buttons on the remote to operate the CD player.
TAPE: press to select the cassette deck as the sound source and make it start playback of a loaded tape. Press to set some buttons on the remote to operate the cassette deck (when using the cassette deck).

22 **SLEEP**
Press to set or release the sleep timer.

Remote control



Remote control

1 **POWER**
Press to switch the power between ON and STANDBY.

2 **Number buttons**
- Use to select preset channels when listening to the tuner.
- Use to select tracks after pressing CD, CD1, CD2, CD3 or PLAY MODE.

3 **FM MODE/MUTING**
Press to switch the FM mode between AUTO and MONO.

4 **CD controls**
PLAY MODE: Press repeatdly to select the play mode you desire (PROG RAM, RANDOM, or off (continuous play)).
REPEAT: Press repetedly to select the repeat mode (REPEAT ALL, REPEAT 1 CD, REPEAT 1, or off).
CD1, CD2, CD3: Press to select a CD tray.

5 **DIRECT**
Press to listen to the original sound of the source.

6 **S.A.BASS**
Press to activate Signal Adaptive BASS function for enhancing the low frequencies.

7 **Tone control buttons**
BASS: Press to adjust low frequencies. After pressing BASS, press +/R or –/L to adjust the bass.
TREBLE: Press to adjust high frequencies. After pressing TREBLE, press +/R or –/L to adjust the treble.
BALANCE: Press to adjust the balance. After pressing BALANCE, press +/R or –/L to adjust the balance

8 **CANCEL**
- Press to cancel a timer operation.
- Press to erase a CD program step.

Setting up the System

Supplied Accesories

Before setting up your system make sure you received all of the following supplied accesories.

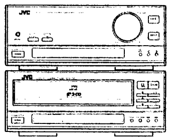
AC power cord x 1
Stereo Audio pin cord x 1
Compu Link cable x 1
AM loop antenna x1
FM wire antenna x1
Batteries (R6P(SUM-3)/AA (15F)) x2
Remote Control x1

Cautions for Placement

Place the system in the following manner to for proper ventilation and many years of trouble free use.

Do not place in any of the following ares.
- Near a heater or other heat emmitting appliance.
- In direct sunlight.
- Do not place the CD player on top of the amplifer/tuner.
- In a place warmer than 35°C (or 95°F).
- In a bathroom, kitchen or other area with steam, humidity, or hot water.
- In a place with lots of static electricity or dust.
- In an unstable area.
- Near appliances that receive electronic wave broadcasts, such as a television or tuner.

When stacking, place the components as illustrated below.


RX-EX70
(Amplifier/tuner)
XL-EX70
(CD player)

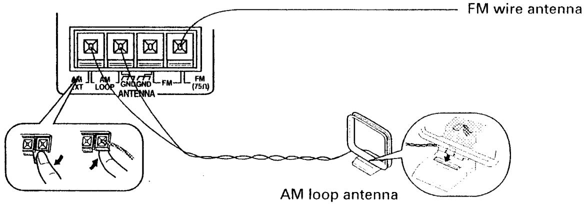
Connections

Before Making Any Connections

- Be sure to confirm the locations of the left and right, + and –, and IN and OUT terminals on each component and make connections correctly and firmly. Incorrect or incomplete connections may result in degradation of the stereo effect, or no sound at all. As a general rule, use the red plugs on the connecting cords to connect the right channels and the white plugs to connect the left channels.
- Do not connect the AC power cord until all other connections are complete.

Connecting the supplied antennas

Connect the supplied FM (wire) antenna and AM loop antenna as shown below.


FM wire antenna
AM EXT
AM LOOP
GND
FM
FM (75Ω)
ANTENNA
AM loop antenna

FM antenna

Affix the antenna to a wall (etc.) in a position which provides the best reception.

AM loop antenna

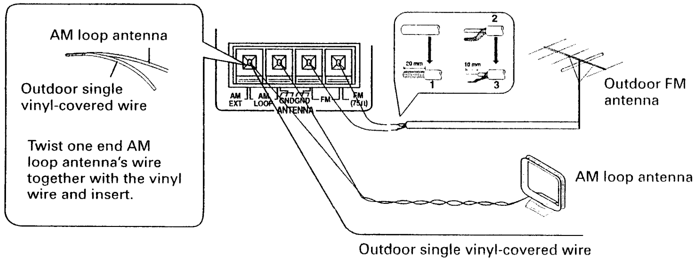
Fold the loop over the base and push in the direction of the arrow.
Place in a position which provides the best reception.

CAUTION

To avoid noise, keep antennas away from this unit's metallic parts, the audio pin cords, and the AC power cord.

Connecting external antennas

- Connect external antennas if reception is not satisfactory with the supplied antennas.


AM loop antenna
Outdoor single vinyl-covered wire
Twist one end AM loop antenna's wire together with the vinyl wire and insert.
AM EXT
AM LOOP
GND
FM
FM (75Ω)
ANTENNA
20 mm
10 mm
1
2
3
Outdoor FM antenna
AM loop antenna
Outdoor single vinyl-covered wire

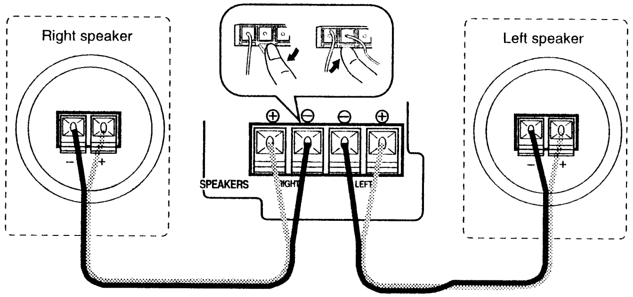
- To improve reception of FM stations, disconnect the supplied FM wire antenna and connect an 75-Ohm FM antenna wire (not supplied).
- To improve reception of AM stations, connect an vinyl-covered wire (not supplied) to the AM EXT terminal in addition to the supplied AM loop antenna.

Connecting the Speakers

Connect the left speaker to the LEFT speaker terminals and connect the right speaker to the RIGHT speaker terminals. Be sure that the speaker cords do not touch the rear panel of this unit. This may damage the unit.

Be sure to connect this unit's + terminals to the + terminals on the speakers, and connect this unit's – terminals to the – terminals on the speakers.

- Refer also to the manual supplied with your speakers.



IMPORTANT

- Use speakers with the correct impedance only. The correct impedance is indicated on the back panel.
- If a TV is installed near the speakers, the TV may display irregular colors. In this case, move the speakers farther away from the TV.

Connecting the Power

Amplifier/Tuner

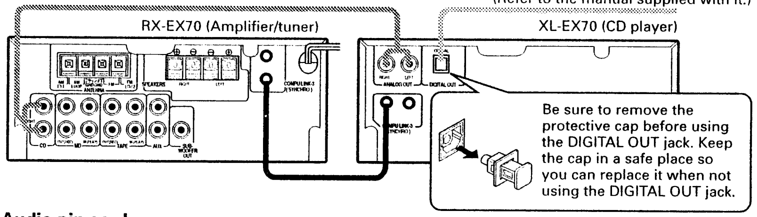
After completing all other connections, connect the power cord to a wall outlet.

CD player

After completing all other connections, use the supplied AC power cord to connect the AC POWER CORD terminal on the back of the CD player to a wall outlet.

Connecting the CD player

To MD recorder
(Refer to the manual supplied with it.)



Be sure to remove the protective cap before using the DIGITAL OUT jack. Keep the cap in a safe place so you can replace it when not using the DIGITAL OUT jack.

Audio pin cord ▨

Use to connect the CD player's ANALOG OUT jacks to the CD input jacks on the RX-EX70 amplifier/ tuner.

Be sure to connect jacks with plugs of the same colors for correct L (Left) and R (Right) connections.

COMPU LINK cable ▬

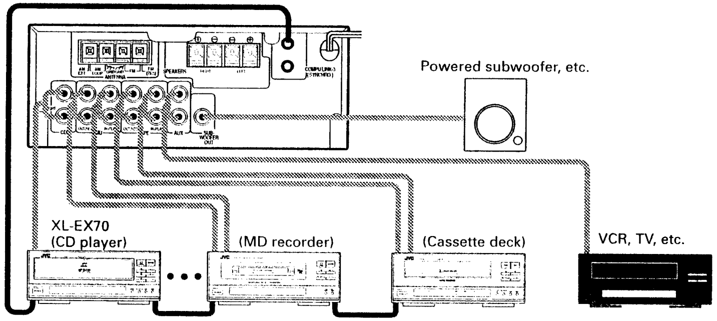
Use the supplied COMPU LINK cable to connect one of the CD player's COMPU LINK-3 (SYNCHRO) jacks to either of the COMPU LINK-3 (SYNCHRO) jacks on the amplifier/tuner.

Optical digital cable (not supplied) ▨

Use to connect the CD player's DIGITAL OUT jack to the optical DIGITAL IN jack of an MD recorder. When making connections to the MD recorder, connect the CD player's DIGITAL OUT jack to the to the MD recorder's DIGITAL IN jack.

Refer to the instructions provided with the MD recorder for details.

Connecting other components



Audio pin cord ▨

Be sure to connect jacks with plugs of the same colors for correct L (Left) and R (Right) connections.
Connect this unit's OUT (REC) jacks to the IN (REC) jacks on a MD recorder or cassette deck.
Connect this unit's IN (PLAY) jacks to the OUT (PLAY) jacks on a MD recorder or cassette deck.
Connect this unit's AUX IN jacks to the sound output jacks on your video deck, TV, etc.

COMPU LINK cable ▬

Use COMPU LINK cables to connect the COMPU LINK-3 (SYNCHRO) jacks of the optional components.

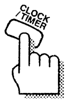
Optical digital cable • • • • • • •

Use to connect the DIGITAL OUT jack of the CD player and DIGITAL IN 1 jack of the MD recorder.

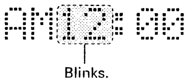
Setting the Clock

This unit incorporates a clock with a 12-hour display. Be sure to set the clock before operating the unit. The clock can be set either in ON or STANDBY mode of power.

Use the remote control unit to set the clock.



① Press CLOCK/TIMER.

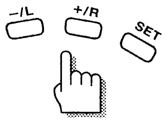


② Set the time of the day.

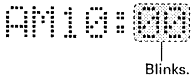
1 Set the hour.

Use +/R or –/L to display the appropriate hour, then press SET.

Hold down +/R or –/L to change the hour sequentially.



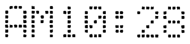
After setting the hour (before pressing SET)



2 Set the minutes.

Use +/R or –/L to display the appropriate minute, then press SET.

Hold down +/R or –/L to change the minutes in 10 minutes steps.



- If you set the clock while the power is on, the display returns to the previous information after completing the clock setting.

To set the clock precisely

After setting the minutes, press SET in sequence with the time announcement on the TV, radio or telephone service. This starts the clock counting from 0 seconds of the set minute.

Why set the time?

Setting the time allows you to use the daily and recording timer operations.

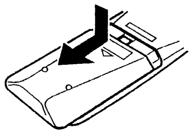
The daily and recording timer operations cannot be set unless the clock has been set. To correct the previously set time, press CLOCK/TIMER repeatedly (5 times) so that the hour blinks to enter the clock set mode.

Notes

- Pressing buttons other than those described above while setting the clock will cancel the clock setup. If this occurs, resume setting the clock from step ①.
- In case of a power failure (or when the power cord has been unplugged) the clock may show the time of the power failure, or a blinking "AM 0:00". If this occurs, reset the clock to the correct time.

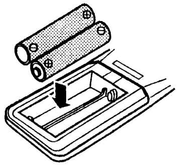
Remote control batteries

Load the supplied batteries (2) into the remote control.



① Open the battery case.

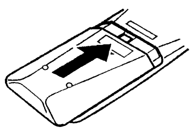
Push down and pull the lid in the direction of the arrow.



② Load the batteries.

Insert two R6P(SUM-3)/AA(15F) batteries.

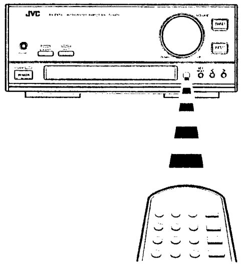
Match the polarity (+ and –) of the batteries with the + and – marks inside the battery compartment.



③ Close the battery case.

Operating the Remote Control

Point the remote control toward the remote sensor on the front panel. The signal may not reach the remote sensor if the remote control is used at an angle, or if there are objects between the remote control and the remote sensor.



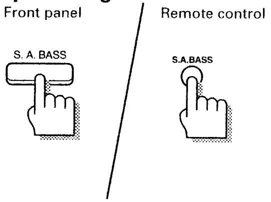
Cautions

Observe the following to avoid battery leakage or explosion:

- If the range or effectiveness of the remote control decreases, replace the batteries using R6P(SUM-3)/AA(15F) type dry cells.
- Do not use an old battery together with a new one.
- Do not use different types of batteries together.
- Do not disassemble the batteries or subject them to high temperatures, like an open fire.
- Remove the batteries if the remote control will not be used for a long time.

Adjusting the Sound

Emphasizing the bass



Press S.A.BASS.

"S.A.BASS" and "ON" appear in the display and the S.A.BASS indicator lights up.

S.A.BASS ➡ ON

To cancel the bass emphasis

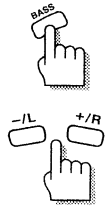
Press S.A.BASS again.

"S.A.BASS" and "OFF" appear in the display and the S.A.BASS indicator goes out.

- The S.A.BASS cannot be adjusted during DIRECT playback.

Adjusting the bass and treble

Use the remote control for these operations.



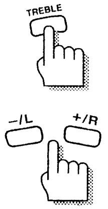
Adjusting the bass

① Press BASS.

② Press +/R or –/L to adjust the bass level.
Press +/R to increase the bass.
Press –/L to decrease the bass.

BASS +2

- The bass can be adjusted in 7 steps from –3 to +3.



Adjusting the treble

① Press TREBLE.

② Press +/R or –/L to adjust the treble level.
Press +/R to increase the treble.
Press –/L to decrease the treble.

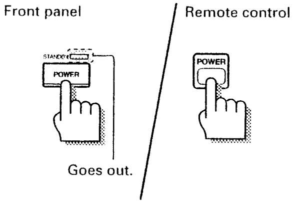
TREBLE+2

- The treble can be adjusted in 7 steps from –3 to +3.

- The BASS, and TREBLE cannot be adjusted during DIRECT playback.

Amplifier Operations

Turning on the Power



Press POWER.

The STANDBY indicator goes out and "HELLO" appears in the display.

- Pressing POWER of RX-EX70 turns on the source component previously selected.
- Pressing POWER of the other components also turns on the amplifier/tuner.

To turn off the power

Press POWER again.

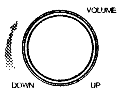
The STANDBY indicator lights up and the display shows "GOOD-BYE", then turns to the clock.

If you have made the Compu Link connection (page 40):

- Other components also turns off.

Adjusting the Volume

From the front panel

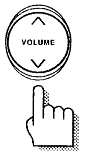


Rotate VOLUME.

The volume level appears in the display.

- Rotate to the right (UP) to increase the volume, rotate to the left (DOWN) to decrease the volume.
- Rotate VOLUME quickly to make large changes, rotate slowly to make small changes.

From the remote control



Press VOLUME ∧ or ∨.

Press ∧ to increase the volume, press ∨ to decrease the volume. Hold down to make a continous change.

- The volume can be set between 0 and 50.

Notes

- The volume cannot be changes while the unit is in the STANDBY mode.
- Be sure to turn the volume down before setting the unit to the STANDBY mode.

FADE MUTING

To mute the sound

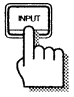
Press FADE MUTING.

When you press FADE MUTING, the volume level decreases to 0 (MUTING). Pressing it again restores the volume.

Selecting a Source

Select the input source to be played.

From the front panel

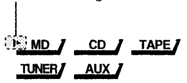


Press INPUT repeatedly.

The name of the selected source appears in the display. Each press of INPUT switches the input source as shown below.

→ TUNER (FM/AM) → MD → CD → TAPE → AUX →

Example) This indicator lights when MD is selected



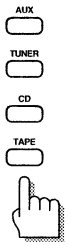
Source indicators

- When the TUNER source is selected, the display shows the frequency of the last received radio station.

One touch operation

When the unit is in the STANDBY mode, press INPUT to automatically turn the power on and switch to the last source you listened to.

From the remote control



Press AUX, TUNER, CD, or TAPE.

The respective input source is selected.

Press TUNER repeatedly to select the band (FM or AM).

One touch operation

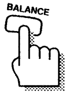
When the power is in the STANDBY mode, press AUX, TUNER, CD, or TAPE to automatically turn the power on and switch to the selected source.

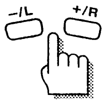
When using other optional components together with this unit via the Compu Link connection (page 40)

When a source is selected, the selected source component switches ON automatically. If the component is ready for playback, it also starts to play (see page 41).

Adjusting the Balance

Use the remote control for these operations.



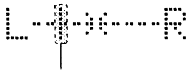


① Press BALANCE.

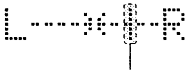
② Press –/L or +/R to adjust the balance level.

Press –/L to shift the sound to the left speaker.

Press +/R to shift the sound toward the right speaker.



Moves to the left when you press –/L



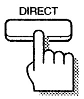
Moves to the right when you press +/R

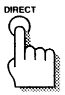
- Even if you shift the balance all the way to the right or left, the sound does not completely disappear from the opposing speaker.
- The BALANCE cannot be adjusted during DIRECT playback.

Direct Playback

Use this function to listen to the original sound of the sound source without any sound adjustments.

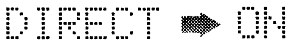
Front panel / Remote control





Press DIRECT.

"DIRECT" and "ON" appear in the display and the DIRECT indicator lights up.



To cancel the DIRECT playback

Press DIRECT again.

"DIRECT" and "OFF" appear in the display and the DIRECT indicator goes out.

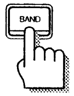
- The S.A.BASS, BASS, TREBLE and BALANCE cannot be adjusted during DIRECT playback.

Tuner Operations

Manual and Automatic Tuning

This section shows you how to tune in an FM or AM broadcast.

From the front panel

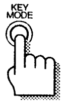


① Press BAND to select the band you desire (FM or AM).

Each press of BAND switches the band between FM and AM.

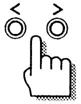
One touch operation

When the unit is in the STANDBY mode, press BAND to automatically turn the power on and tune in the last station you listened to.



② Press KEY MODE so that "PRESET" does not appear in the display.

After storing stations in the receiver's preset memory (page 25), you can use the preset tuning feature (page 26).



③ Tune in the station you desire.

For manual tuning

Press > (for higher frequencies) or < (for lower frequencies) repeatedly to locate the frequency of the station you desire. When a station is received, the TUNED indicator lights up.

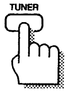
For automatic tuning

Hold down > or < until the frequencies start to change, then release.

When a station is tuned in, "TUNED" appears in the display and the frequency stops changing. If you know the frequency of the station you want to receive, keep holding > or < until the amplifier/tuner nears the frequency you desire (this prevents the amplifier/tuner from stopping at other intermediate stations).

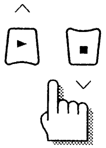
When a stereo broadcast is received, the STEREO indicator lights up.

From the remote control



① Press TUNER to select the band you desire (FM or AM).

In addition to selecting the FM band, this operation also sets the remote control to tuner operation mode. The remote control must be set to the tuner operation mode before proceeding to the following steps, even if the band was previously set to FM using the controls on the front panel.



② Tune in the station you desire.

For manual tuning

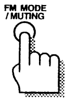
Press Λ (►) (for higher frequencies) or V (■) (for lower frequencies) repeatedly to locate the frequency of the station you desire. When a station is received, the TUNED indicator lights up.

For automatic tuning

Hold down Λ (►) or V (■) until the frequencies start to change, then release. When a station is tuned in, the TUNED indicator lights up and the frequency stops changing. If you know the frequency of the station you want to receive, keep holding Λ (►) or V (■) until the amplifier/tuner nears the frequency you desire (this prevents the amplifier/tuner from stopping at other intermediate stations).

Stereo and monaural reception

Switching to monaural reception is an effective way to reduce noise when receiving weak FM stereo broadcast.



To switch to monaural reception

Press FM MODE/MUTING on the remote control so that "MONO" appears in the display. This switches the reception mode to mono. In this mode, stereo broadcasts are also received in mono.

To switch to stereo reception

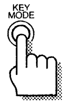
Press FM MODE/MUTING on the remote control again so that "AUTO" appears in the display. This switches the reception mode to auto tuning. When a program is broadcast in stereo the STEREO indicator lights up and you hear the stereo sound. When in monaural, the STEREO indicator goes off and you hear monaural sound.

Normally, it is recommended to use Automatic tuning. If clear reception is not possible with the supplied antenna, connect an external antenna (see page 14).

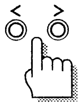
Listening to Preset Stations

This section explains how to tune in preset stations.

From the front panel



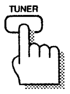
① Press KEY MODE so that "PRESET" appears in the display.



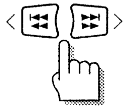
② Press > (for higher numbers) or < (for lower numbers) repeatedly to select the preset you desire.

From the remote control

You can tune in the preset stations from the remote control either, by switching through the presets one by one, or by specifying the preset you desire.



① Press TUNER to select the tuner operations.
In addition to selecting the FM band, this operation also sets the remote control to tuner operation mode. The remote control must be set to the tuner operation mode before proceeding to the following steps, even if the band was previously set to FM using the controls on the front panel.



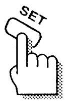
② Select the preset station you desire.
To switch through the preset stations one by one
Press > (▶▶I ▶▶) (for higher numbers) or < (I◀◀ ◀◀) (for lower numbers) repeatedly to select the preset number you desire.
To specify the preset stations
Use the number buttons to select a preset number.

- For preset number 5, press 5.
- For preset number 15, press +10 then 5.
- For preset number 20, press +10 then 10.
- For preset number 30, press +10, +10, then 10.

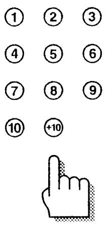
Presetting Stations

Once stations are preset, they can be called up quickly with preset tuning. You can preset a total of 40 stations, either FM or AM.

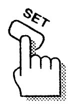
① Tune in the station you want to preset.
Use the buttons on the remote control to tune in the station; otherwise, following operation will not be possible.



② Press SET.
The unit switches to preset memory mode ("— —" and PRESET blink in the display).
Proceed to step ③ during the 4 seconds that "— —" and PRESET are blinking. After 4 seconds, preset memory mode is released. If this happens, press SET again to reactivate it.



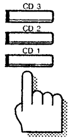
③ Use the number buttons on the remote control to specify the preset number you desire.
The preset number and PRESET blink in the display.
Proceed to step ④ during the 4 seconds that the preset number and PRESET are blinking. After 4 seconds, preset memory mode is released. If this happens, start again from step ②.



④ Press SET again.
"MEMORY" is displayed and the station is stored at the selected preset number.
If another station was previously stored at that preset number, that station is erased and the new station is memorized in its place.

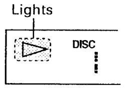
Basic Operations

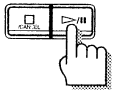
The following operations play all 3 CDs once, one after another.



① Load CDs.
See "Loading CDs" on page 27.

② Press CD 1, CD 2 or CD 3 for the disc you want to play.
The amplifier/tuner automatically switches to the CD input and the CD starts to play.
The ▷ indicator lights up.





Press ▷/II instead of CD 1, CD 2 or CD 3 to start playing the CD whose disc number appears in the display.

One touch operation
When the unit is in the STANDBY mode, press CD 1, CD 2 or CD 3 or ▷/II to automatically turn on the power to the CD player and amplifier/tuner, set the amplifier/tuner to the CD input and start playing the CD.

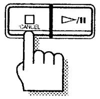
CD playback sequence
When 3 CDs are loaded, they are played in one of the following sequences.

When CD 1 is pressed
CD 1 ⇨ CD 2 ⇨ CD 3 (then stops)

When CD 2 is pressed
CD 2 ⇨ CD 3 ⇨ CD 1 (then stops)

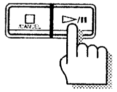
When CD 3 is pressed
CD 3 ⇨ CD 1 ⇨ CD 2 (then stops)

* When only 2 CDs are loaded, they play in the same order, but the disc tray without a CD is skipped.



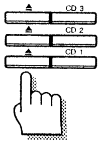
To stop playback

Press □/CANCEL.
When playback is stopped, the display shows the total number of tracks and total playing time of the current disc for 4 seconds, then it shows the playing time for track 1.



To pause playback

Press ▷/II. The ⏸ indicator lights up.
Press again to resume playback from the position where it was paused.



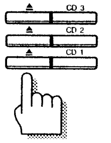
To remove a CD:

Press the respective ⏏.

CD Operations

Loading CDs

The CD player's unique 3 disc changer mechanism houses 3 individual disc trays inside the main tray.



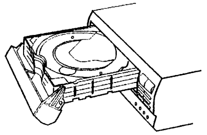
① Press ⏏ (open) for the disc tray (CD 1to 3) you want to load.
The main tray opens to the selected disc tray.
The disc tray number and "OPEN" appear in the display.

DISC1 OPEN

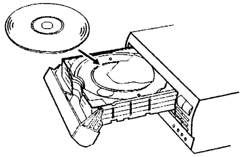
Example) When CD1 ⏏ is pressed

- The disc trays housed in the main tray are numbered CD 1, CD 2, and CD 3 starting from the bottom tray.

One touch operation
When the unit is in the STANDBY mode, press one ⏏ to automatically turn the power on and open to the selected tray.



② Place a CD with the label side facing up.
Place CD singles (8 cm) in the depressed inner circle.



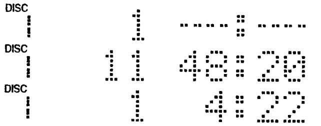
③ Press the same ⏏ you pressed in step ①.
The main tray closes.
The disc tray number and "CLOSE" appear in the display.

DISC1 CLOSE

Example) When CD 1 ⏏ is pressed

- Repeat steps ① to ③ to load up to 3 CDs.

Displayed information
When a CD is loaded, the disc number for that CD is displayed and the player reads the disc's data. After the data is read, the display shows the total number of tracks and total playing time of the disc, then switches to show the playing time for the first track.



Reading data

Total number of tracks and total playing time (shown for 4 seconds)

Playing time for track 1

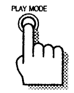
Likewise, when playback is stopped, the display shows the total number of tracks and total playing time of the current disc for 4 seconds, then it shows the playing time for track 1.

Tip
When loading more than one CD, instead of closing the main tray, press ⏏ for the next tray you want to load, the main tray automatically closes and then reopens to selected disc tray.

CAUTION
The disc tray will close if pushed inward. Be careful not to push the tray inward when placing a CD.

Program Play Mode

This play mode lets you play tracks from up to 3 CDs in the order you desire.



① Load CDs.
See "Loading CDs" on page 27.

② Press PLAY MODE repeatedly to select PROGRAM.
"PROGRAM" appears in the display and the PROGRAM indicator lights up.

- If some tracks were previously programmed, the disc, track, and program numbers of each track are displayed.

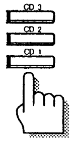
Lights

DISC 1 PROGRAM PROGRAM

Each time you press PLAY MODE, the play modes switch as follows:

→ **PROGRAM** → **RANDOM** → Off (Continuous play) →

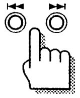
- The CD player must be in stop mode when switching the play modes. If necessary, press □/CANCEL to stop playback before pressing PLAY MODE.



③ Program the tracks.
[1] Press CD 1, CD 2 or CD 3 to select the disc containing the track you want to program.

CD2 1 P 0

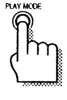
Blinks
Example) Selecting disc 2.



[2] Select a track number by pressing I◄◄ or ►►I.

CD2 4 P 0

Blinks
Example) Selecting track 4.



[3] Press PLAY MODE to register the track.
The display stops blinking and lights steadily, and the program number is incremented by 1.

CD2 4 P 1

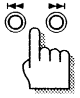
Program No.

Notes

- Repeat steps ① to ③ to program up to 32 tracks. If you attempt to program more than 32 tracks "FULL" appears in the display.
- Perform step ② within 4 seconds of step ①. If 4 seconds elapse between any operations, the unit automatically returns to the previous state.
- When using the remote control, see page 44.

To exchange CDs during playback of another

Press ▲ corresponding to a disc number not shown in the display to open that disc tray and exchange the CD.
When CDs are exchanged during playback, playback stops after playing the last exchanged CD.



To skip to the beginning of a track

Press ►►I once to skip to the beginning of the next track.
Press I◄◄ once to skip to the beginning of the current track.

- Each additional press skips to another track.

To check the playing time of a track

Press I◄◄ or ►►I during stop mode to display the desired track number. The playing time for that track is also displayed.

Fast forward / reverse

Press I◄◄ or ►►I on the front panel.
For fast forward, press and hold down ►►I.
For reverse, press and hold down I◄◄. Release the button when the part you wish to listen to is reached.

- These operations cannot be controlled from the remote control unit.

Notes

- When CD 1, CD 2 or CD 3 is pressed, if there is no CD in the corresponding disc tray, "NO DISC" appears in the display and the unit enters stop mode.

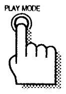
NO DISC2

Example) When disc tray of disc number 2 does not contain CD

- When ▷/II is pressed, if the disc tray corresponding to the disc number shown in the display does not contain a CD, unit checks the other disc trays and automatically plays the first CD it finds. If there are no CDs, the unit enters stop mode when it reaches the last disc tray.

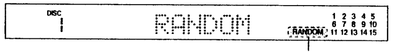
Random Play Mode

This play mode lets you play tracks from up to 3 CDs at random. You can enjoy listening to the tracks in a different order each time.



① Load CDs.
See "Loading CDs" on page 27..

② Press PLAY MODE repeatedly to select RANDOM.
"RANDOM" appears in the display and the RANDOM indicator lights up.

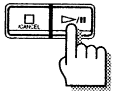


Lights

Each time you press PLAY MODE, the play modes switch as follows:

→ PROGRAM → RANDOM → Off (Continuous play)

- The CD player must be in stop mode when switching the play modes. If necessary, press □/CANCEL to stop playback before pressing PLAY MODE.



③ Press ▷/II to start random playback.
Random playback stops automatically after playing each track once.

- The CD player creates an order so that no tracks will be repeated.
- Random playback stops if the main tray is opened.

To cancel random playback

Press PLAY MODE repeatedly during stop mode to select a different play mode.

To play the track at random repeatedly

Use the repeat play mode in combination with the random play mode. The tracks are played again in a different order after playing each track once.
For details on the repeat mode, see page 33.

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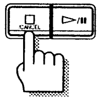
④ Press ▷/II to start program playback.
Program playback stops automatically after playing all the programmed tracks.

To check the programmed tracks

Press I◀◀ or ▶▶I on the remote control during stop mode.
Pressing ▶▶I shows programmed track numbers in the programmed order.
Pressing I◀◀ shows them in the reverse order.

- Programmed tracks cannot be checked by pressing I◀◀ or ▶▶I on the front panel.

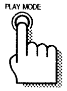


To remove programmed tracks

Press □/CANCEL (or CANCEL on the remote control) during stop mode.
Each time you press the button, a track is removed from the end of the program.

If you make a mistake during programming

Press □/CANCEL (or CANCEL on the remote control) during stop mode repeatedly to remove tracks from the end of the program until you reach the mistake, then reprogram from that point.



To cancel program playback

Press PLAY MODE repeatedly during stop mode to select a different play mode.
The program remains in memory even after exiting the program play mode.

- The program is cleared from memory if the power cord is unplugged or there is a power failure.

When you remove a disc containing programmed tracks

The tracks from that disc are cleared from the program.

To play the program repeatedly

Use the repeat play mode in combination with the program play mode.
For details on the repeat mode, see page 33.

Timer Operations

Introduction

This unit incorporates three different timers.
Use the remote control for timer settings.

The timer can also be used to operate other optional components are connected to this unit.
To operate the other optional components using the timer, be sure Compu Link cables are connected between the COMPU LINK-3 jacks on each component.

DAILY timer (Wake-up timer, page 35)

The daily timer operates every day at the same time and can be used as an alarm clock.

- Specify the start time (power ON), the end time (power STANDBY), the source you want to hear, and the volume.

REC timer (Recording timer, page 37)

This timer operates only once and allows you make an unattended recording at a preset time.

- Set the time you want the recording to start (power ON), the time you want the recording to end (power STANDBY), and the source to be recorded (radio station).

SLEEP timer (Sleep timer, page 39)

Use this timer when you want to fall asleep listening to music.

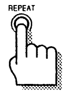
- Specify how long you want to listen. When the specified period has elapsed, the power automatically switches to the STANDBY mode.

Notes:

- Be sure to set the clock before setting the timer.
- Timer sets are stored in memory until they are changed.
- Timer settings may be erased if the power cord is unplugged or if there is a power failure. The timer memory provides for about 2~3 days of backup, but if the settings are lost, please reset them.

Repeat Play Mode

This play mode lets you repeat the current track, the current CD, or all the tracks on all the CDs.



① Press REPEAT repeatedly to select the repeat mode.

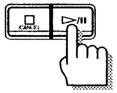
Each time you press REPEAT, the repeat modes switch as follows:

→ REPEAT ALL → REPEAT 1 CD → REPEAT 1 → Off (mode cancelled) →

REPEAT ALL
Repeats all the tracks on all CDs.
This mode can be selected in any play mode.

REPEAT 1 CD
Repeats all the tracks on the current CD.
This mode can only be selected during the normal (continuous) play mode.

REPEAT 1
Repeats the current track.
This mode can be selected in any play mode.



② Press ▷/II to start repeat playback.

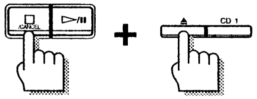
Note: The repeat mode can also be selected while playing

To cancel repeat playback

Press REPEAT repeatedly to turn off the REPEAT indicator.

Tray Lock

This function electronically locks the main tray so that it can not be opened simply by pressing one of the ≜ buttons.



① Set the power to the STANDBY mode.

If the power is presently ON, press POWER.

② Press ≜ for CD 1 while holding down □/CANCEL.

"LOCKED" appears in the display and the main tray is locked.

- When the main tray is locked, the display shows "LOCKED" and the main tray cannot be opened.
- When a ≜ is pressed, "LOCKED" appears in the display and the unit remains in the STANDBY mode.

To unlock the tray

Repeat steps ① and ② above.

"UNLOCKED" appears in the display and the main tray is unlocked.

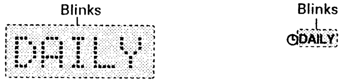
- Pressing a ≜ opens the selected tray.
- When a ≜ is pressed during the STANDBY mode, the power is turned on and the selected tray opens automatically.

Daily Timer

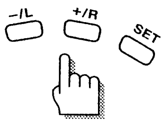
Use the remote control to set this timer. It can be set during either power ON or STANDBY.
Be sure to set the clock before attempting this operation.

CLOCK /TIMER

① Press CLOCK/TIMER to display "DAILY".



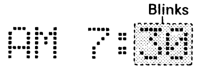
② Press CLOCK/TIMER again.
"ON" appears in the display.



③ Set the start time (ON).

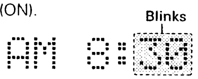
[1] Set the hour.
Use +/R or –/L to display the appropriate hour, then press SET.
Hold down +/R or –/L to change the hour sequentially.

[2] Set the minutes.
Use +/R or –/L to display the appropriate minute, then press SET.
Hold down +/R or –/L to change the minutes in 10 minutes steps.

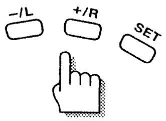


After setting the minutes (before pressing SET)

④ Set the end time (OFF).
Set the end time (OFF) in the same way you set the start time (ON).



After setting the minutes (before pressing SET)



⑤ Select the source to be played when the timer activates.
Press +/R or –/L repeatedly to select the source, then press SET.
Each time +/R or –/L is pressed, the source switches as follows.

→ TUNER ←→ MD ←→ CD ←→ TAPE ←

When selecting TUNER
Press +/R or –/L repeatedly to select desired preset channel, then press SET.

When selecting MD
Press +/R or –/L repeatedly to select desired track number, then press SET.

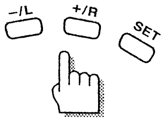
- You can select any track number from 1 to 20.
- Pressing SET without selecting a track starts playback from the first track of the MD.

When CD is selected:

[1] Press +/R or –/L repeatedly to select desired disc number, then press SET.

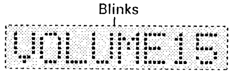
[2] Press +/R or –/L repeatedly to select desired track number, then press SET.

- You can select any track number from 1 to 20.
- Pressing SET without selecting the disc and track numbers starts playback from the first track of the last disc selected before timer operation.



⑥ Set the volume.
Press +/R or –/L repeatedly to set the volume, then press SET.

- The volume can be set between 0 and 50.



After setting the volume (before pressing SET)

After SET is pressed, the display shows the start time, the end time, the source, and the volume settings.

- If the power is ON, press POWER to enter the STANDBY mode once your settings are complete.

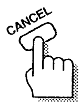
Timer operation

Once set, the DAILY timer operates every day, at the same time, unless the DAILY timer is canceled.
When the end time (OFF) arrives, the unit automatically switches to the STANDBY mode.

Switching the DAILY timer OFF and ON

The DAILY timer settings are stored in memory.
To turn off the timer without changing the settings, switch the timer operation OFF. The next time you want to use the timer, switch it back ON (the previous settings are still available).

CLOCK /TIMER

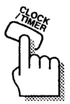


Switching OFF
Press CLOCK/TIMER, so that "DAILY" blinks in the display (as described in step ① of the main operations), then press CANCEL. The DAILY indicator turns off and "OFF" appears in the display.

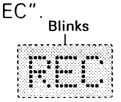
Switching ON
Press CLOCK/TIMER, so that "DAILY" blinks in the display (as described in step ① of the main operations), then press SET. The DAILY indicator lights up and the start time, the end time, the source, and the volume settings appear in the display.

Recording Timer

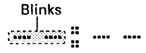
Use the remote control to set this timer.
It can be set during either power ON or STANDBY.
Be sure to set the clock before attempting this operation.

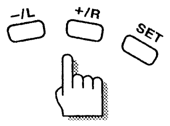


① Press CLOCK/TIMER 3 times to display "REC".

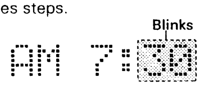


② Press CLOCK/TIMER again.
"ON" appears in the display.



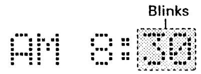


③ Set the start time (ON).
[1] Set the hour.
Use +/R or –/L to display the appropriate hour, then press SET.
Hold down +/R or –/L to change the hour sequentially.
[2] Set the minutes.
Use +/R or –/L to display the appropriate minute, then press SET.
Hold down +/R or –/L to change the minutes in 10 minutes steps.

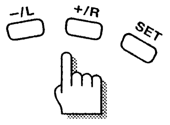


After setting the minutes (before pressing SET)

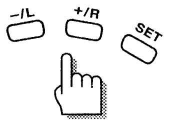
④ Set the end time (OFF).
Set the end time (OFF) in the same way you set the start time (ON).



After setting the minutes (before pressing SET)



⑤ Select the preset station to be recorded when the timer activates.
Select the radio station.
Press +/R or –/L repeatedly to select the desired preset station, then press SET.



⑥ Select the recording component (MD or TAPE).
Press +/R or –/L so that the desired component is blinking, then press SET.

- The blinking component is selected.

After SET is pressed, the display shows the start time, the end time, the source, and the volume settings.

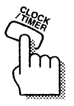
- If you plan to record while you are away, set the volume to 0 before switching the power to the STANDBY mode.

Timer operation

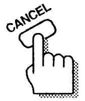
When the start time comes, the power turns on and recording begins.
When the end time comes, the power automatically switches to the STANDBY mode.

Switching the REC timer ON and OFF

The REC timer operates only once, but the settings are stored in memory.
To use the same REC timer again, switch the REC timer ON (the previous settings are still available).
To cancel the REC timer before the start time arrives, switch the REC timer OFF.



Switching ON
Press CLOCK/TIMER, so that "REC" blinks in the display (as described in step ① of the main operations), then press SET. The REC indicator lights up and the start time, the end time, the source, and the volume settings appear in the display.



Switching OFF
Press CLOCK/TIMER, so that "REC" blinks in the display (as described in step ① of the main operations), then press CANCEL. The REC indicator turns off and "OFF" appears in the display.

COMPU LINK

Linked Operation of the Other Optional Components (Compu Link)

The EX series components can be controlled under linked operation provided by the JVC's Compu Link remote control system.

What is Compu Link

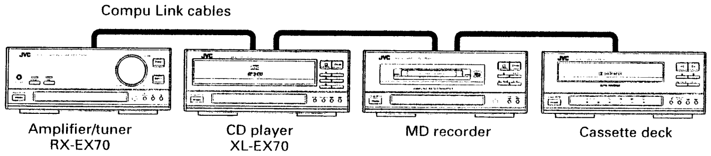
The world of single components, in which you purchase a cassette deck, CD player, amplifier and other components separately and enjoy your own composition, is an effective means for pursuit of high-quality reproduction. However, in terms of operability, the need of controlling components independently makes their control complicated and their linked operation impossible. Then, isn't it possible to combine single components and control them as simply as an integrated audio system? The Compu Link remote control system is the response to such a requirement.
The components in the JVC EX series are equipped with jacks named COMPU LINK-3 (COMPU LINK jacks). By connecting the COMPU LINK jacks of these components, they can be controlled simply with a systematized, linked operation.

Compu Link connections

Using Compu Link cables, connect the COMPU LINK jacks of EX series components. Connect so that the Compu Link cables can bridge all of the EX series components you have as shown below. The components can be connected in any order.

Compu Link-3 features

The Compu Link-3 system of the EX series components makes the following operations possible.



Shortcut playback

Simply selecting an input source of the amplifier/tuner starts playback of the selected source component (CD player, MD recorder or cassette deck).
Also, even if you do not touch the amplifier/tuner, starting playback of a source component sets the amplifier's input source automatically to the played component.
(See "Shortcut Playback" on page 41.)

A single remote control unit

The remote control unit provided with the units can also be used to control other EX series components.
(See "Remote Control of the Other Optional Components" on page 43.)

Synchronized recording

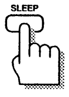
Recording can be started automatically in synchronism with the start of playback of a source component.
(See "Synchronized Recording" on page 45.)

Timer operation

The timer function built into the amplifier/tuner can be used to start recording or playback of other components at the reserved time of the day or switch the power to the STANDBY mode in the reserved time period.

Sleep Timer

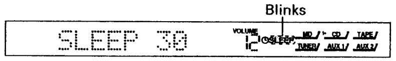
Use the remote control to set this timer.



① Start playing a source.

② Press SLEEP repeatedly to set the timer.
Each time you press SLEEP the timer changes as follows.

→ 10 → 20 → 30 → 60 → 90 → 120
Off (Cancelled)



Setting is complete when the SLEEP indicator stops blinking and lights steadily.

When the specified period of time has elapsed, the power automatically switches to the STANDBY mode.

To change the timer length

After setting the timer, press SLEEP once to displays the time remaining.
To change the timer, press SLEEP again to select the length you desire.

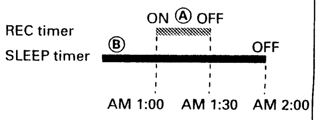
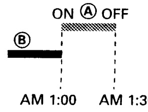
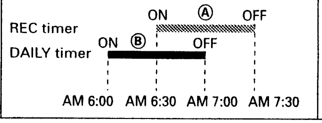
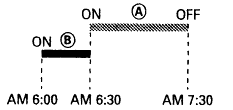
To cancel the SLEEP timer:

After setting the timer, press SLEEP repeatedly until the timer length disappears. The SLEEP indicator turns off and the timer is cancelled.

Timer Priority

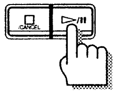
When more than one timer is set for a certain time, this unit operates as shown below.

When more than one timer is set to operate at a given time.

	Setting	Actual operation REC timer is given priority. • There is no sound for a few seconds immediately before the REC timer turns on.
Case 1	 REC timer SLEEP timer ON Ⓐ OFF Ⓑ OFF AM 1:00 AM 1:30 AM 2:00	
Case 2	 REC timer DAILY timer ON Ⓐ OFF ON Ⓑ OFF AM 6:00 AM 6:30 AM 7:00 AM 7:30	

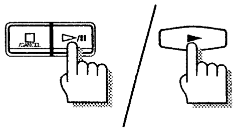
Shortcut Playback (From a Source Component)

By starting playback of a source component, the amplifier/tuner's input source is automatically switched to that source and playback can be monitored through it.
If playback is started while the amplifier/tuner's power is in the STANDBY mode, it is also switched ON automatically.



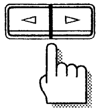
CD player operation

Press ▷/II or CD 1, CD 2, or CD 3.
The amplifier/tuner's input source is set to "CD" and CD playback starts.
If the amplifier/tuner's power is in the STANDBY mode, it is automatically switched ON.



MD recorder operation

Press ▷/II of the MD recorder or ► of the remote control unit provided with the MD recorder.
The amplifier/tuner's input source is set to "MD" and MD playback starts.
If the amplifier/tuner's power is in the STANDBY mode, it is automatically switched ON.



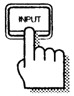
Tape deck operation

Press ◁ or ▷.
The amplifier/tuner's input source is set to "TAPE" and tape playback starts.
If the amplifier/tuner's power is in the STANDBY mode, it is automatically switched ON.

- It takes about 5 seconds after the amplifier/tuner is turned ON until it can start audio reproduction. In this period, the audio cannot be reproduced even when the source component has started playback. As a result, the beginning of playback may not be heard in this case.
- When another source component is played, the source component which has been played stops automatically in a few seconds.

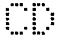
Shortcut Playback (From the RX-EX70 Amplifier/tuner)

By simply pressing INPUT of the amplifier/tuner (RX-EX70) to select an input source, the selected source component can automatically be turned on and its playback started.



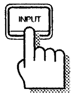
Playing CDs

Press INPUT to select "CD".



The CD player is turned on and playback of the CD with the disc number displayed on the CD player starts.
If no CD has been loaded in the CD player, its display shows "NO DISC".

- When another input source is selected by pressing INPUT, the CD player stops automatically in a few seconds.

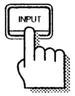


Playing an MD

Press INPUT to select "MD".

The MD recorder is turned on, and if an MD has been loaded in it, playback of the MD starts.
If no MD has been loaded in the MD recorder, its display shows "NO DISC".

- When another input source is selected by pressing INPUT, the MD recorder stops automatically in a few seconds.



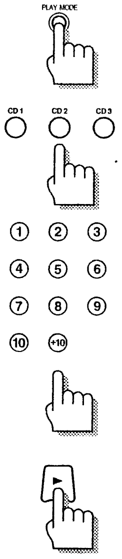
Playing a cassette tape

Press INPUT to select "TAPE".

The cassette deck is turned on, and if a tape has been loaded in it, playback of the tape starts.

- When another input source is selected by pressing INPUT, the cassette deck stops automatically in a few seconds.

Program playback of CD



① While the CD player is in stop mode, press PLAY MODE of the CD player to "PROGRAM".

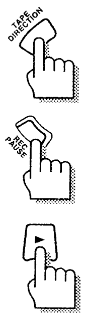
② Specify the disc number.
Press one of CD1, CD 2 and CD 3.

③ Specify a track number using the number buttons.
Specify while the display is blinking (for 4 sec.).

④ Program required tracks by repeating steps ② and ③ for each.

⑤ Press ►.
Program playback starts.

Recording of cassette deck



①. Load the tape for use in recording in the tape tray.

② Press TAPE DIRECTION to select the tape running direction.

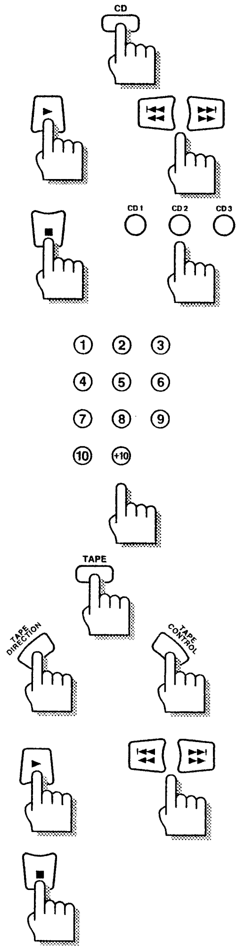
③ Press REC PAUSE.
The cassette deck enters the record-pause mode.

④ Play the source to be recorded.

⑤ Press ►.
Recording starts.

Remote Control of the Other Optional Components

The remote control provided with the units can be used to control other optional components such as the CD player (XL-EX70) and cassette deck.
Operate the remote control by pointing it to the remote sensor of the amplifier/tuner.



Controlling the CD player (XL-EX70)
Use the following buttons to remote control the CD player.

CD: Selects the CD player as the sound source and make it start playback of a loaded CD.
►: Starts playback.
I◀◀ ◀◀, ▶▶I ▶▶: Skips to the beginning of a track.
■: Stops playback.
CD 1: Starts playback of the CD with disc No. 1.
CD 2: Starts playback of the CD with disc No. 2.
CD 3: Starts playback of the CD with disc No. 3.

Shortcut playback
Pressing CD or one of CD1 to 3 starts playback immediately.

Number buttons
1 to 10, +10: Used to specify a track number directly after pressing CD, CD1, CD2, CD3 or PLAY MODE.
To select track No. 5: Press 5.
To select track No. 15: Press +10 then 5.
To select track No. 20: Press +10 then 10.
To select track No. 32: Press +10 three times then press 2.

Controlling the cassette deck
Use the following button to remote control the cassette deck.
TAPE: Selects the cassette deck as the sound source and make it start playback of the inserted tape.
TAPE CONTROL: Switches the remote control mode to the tape mode without selecting the cassette deck as the sound source.
TAPE DIRECTION: Swiches the tape running direction.
►: Starts playback or recording.
I◀◀ ◀◀, ▶▶I ▶▶: Press during playback to skip to the beginning of a piece of music.
Press during stop to fast forward or rewind tape.
■: Stops playback or recording.
REC PAUSE: Initiates record-pause mode.

Shortcut playback
Pressing TAPE (or TAPE CONTROL then ►)starts playback immediately.

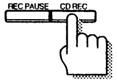
Synchronized Recording

When recording CD audio onto an MD, CD audio onto a cassette tape or MD audio on a cassette tape, the recording operation can be synchronized with the playback operation.

Recording CD audio onto an MD (1: Recording the digital input from the CD player)

① Prepare the MD recorder.
Load a recordable MD (Mini Disc) in the MD recorder.

② Prepare the CD player.
Load the CD to be recorded in the CD player. Program tracks if required.

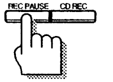


③ Press CD REC of the MD recorder.
Synchronized recording starts.

- To stop the recordind, press □/CANCEL either or the MD recoder or on the CD player.
- Refer also to the instruction manual of the MD recorder.

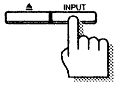
Recording CD audio onto an MD (2: Recording the analog input from the CD player)

① Prepare the MD recorder.
Load a recordable MD (Mini Disc) in the MD recorder.

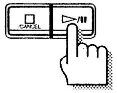


② Prepare the CD player.
Load the CD to be recorded in the CD player. Program tracks if required.

③ Press REC PAUSE of the MD recorder.
The MD recorder enters record-pause mode.



④ Press INPUT of the MD recorder to select the analog input.



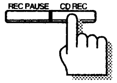
⑤ Press ▷/II of the CD player.
Synchronized recording starts.

- To stop the recordind, press □/CANCEL either or the MD recoder or on the CD player.
- Refer also to the instruction manual of the MD recorder.

Recording CD audio onto a cassette tape (1)

① Prepare the cassette deck.
Load a tape for use in recording In the cassette deck.

② Prepare the CD player.
Load the CD to be recorded in the CD player. Program tracks as required.



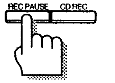
③ Press CD REC of the cassette deck.
Synchronized recording starts.

- To stop recording, press □/CANCEL on the CD player or ■ on the casse the deck.
- Refer also to the instruction manual of the cassette deck.

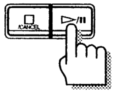
Recording CD or MD audio onto a cassette tape (2)

① Prepare the cassette deck.
Load a tape for use in recording in the cassette deck.

② Prepare the CD player or MD recorder.
To record CD: Load the CD to be recorded in the CD player and program tracks as required.
To record MD: Load the MD to be recorded in the MD recorder and program tracks as required.



③ Press REC PAUSE of the cassette deck.
The cassette deck enters the recording standby mode.



④ Press ▷/II of the CD player or MD recorder.
Synchronized recording starts.

- Refer also to read the instruction manuals of the other components.

Additional Information

Troubleshooting

If you experience any difficulty with your units, check the following list for a possible solution before calling for service. If you cannot solve the problem from the hints given here, or the units have been physically damaged, call a qualified person, such as your dealer, for service.

SYMPTOM	POSSIBLE CAUSE	ACTION
Amplifier/tuner Amplifier/tuner does not respond.	• The AC power cord is disconnected.	• Connect the power.
No sound.	• Connections are incorrect or incomplete.	• Refer to "Connections" and make sure all equipment is connected correctly.
	• The speaker cords are not connected.	• Connect the speaker cords.
	• Headphones are connected.	• Disconnect the headphones.
	• The volume control is turned all the way down.	• Turn VOLUME to the right.
Sound placement and/or motion is undefined.	• The polarity (+, –) of one speaker is reversed.	• Make sure both speakers are connected with the correct polarity.
Sound comes from only one speaker.	• The balance is turned all the way to the right or left. • A speaker cords is disconnected.	• Adjust the balance toward the center. • Make sure the speaker cords are connected securely.
Noise in broadcast signal makes it difficult to hear.	• Antenna is not connected. • The AM loop antenna is too close to the unit.	• Make sure the antennas are connected securely. • Change the location and direction of the AM loop antenna.
	• The FM wire antenna is laying in a pile on the floor.	• Strech the wire antenna out and pin it in a position that provides good reception.
Remote control does not work	• Batteries are exhausted. • Battery polarity (+, –) is reversed. • Incorrect operation.	• Replace the batteries. • Reinsert batteries correctly. • Point remote control at the remote sensor on the amplifier/tuner.
	• The remote sensor is in direct sunlight.	• Keep the remote sensor away from direct sunlight.

SYMPTOM	POSSIBLE CAUSE	ACTION
CD player Playback is not possible.	• No disc has been loaded. • The disc was inserted upside-down. • The disc is not flat in the groove on the disc tray • The playback is paused. • The disc is damaged. • Moisture has condensed inside the unit.	• Load a disc (see page 27). • Load the disc so that the label side faces up in the disc tray. • Load the disc so that it lies flat in the disc tray (see page 27). • Press ▷/II. • Load a different disc. • Leave the unit turned on until the moisture evaporates.
Sound is intermittent.	• The disc is dirty. • The disc is warped or scratched.	• Wipe the surface disc with a soft cloth. • Replace the disc with a new one.
No sound.	• Connections are incorrect or incomplete. • Volume control on amplifier /tuner is turned all the way down.	• Check to make sure the all equipment is connected correctly. • Adjust the volume on the amplifier/tuner.
Disc tray does not open.	• Power cord is not connected. • Power is not turned on.	• Connect the power cord. • Turn the power on.
CD player does not respond.	• The power cord is disconnected. • The Compu Link cable is not connected. • Power is not turned on.	• Connect the power cord. • Connect the Compu Link cable. • Turn the power on.

QUALITY **JVC** SERVICE

HOW TO LOCATE YOUR JVC SERVICE CENTER

TOLL FREE : 1-800-537-5722

Dear customer:
In order to receive the most satisfaction from your purchase, read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location, please refer to the factory service center list below or within the Continental United States, Call 1-800-537—5722 for your authorized servicer. Remember to retain you Bill of Sale for Warranty Service.

—JVC

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COMPANY OF AMERICA
DIVISION OF US JVC CORP.

FACTORY SERVICE CENTER LOCATIONS

107 Little Falls Road
Fairfield, NJ 07004-2105
(201) 808-9279

1500 Lakes Parkway
Lawrenceville, GA 30243-5357
(770) 339-2522

705 Enterprise Street
Aurora, IL 60504-8149
(630) 851-7855

5665 Corporate Avenue
Cypress, CA 90630-0024
(714) 229-8011

2969 Mapunapuna Place
Honolulu, HI 96819-2040
(808) 833-5828

10700 Hammerly, Suite 110
Houston, TX77043
(713) 935-9331

230 Eliot Street
Ashland, MA 0172-2377
(508) 881-5923

14505 Commerce Way
Miami Lakes, FL 33016-1512
(305) 362-6252

890 Dubuque Avenue
South San Francisco, CA 94080-1804
(415) 871-2666

Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, service is the key to maintaining the high level of performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.

NATIONAL HEADQUARTERS
JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF US JVC CORP.
107 Little Falls Road
Fairfield, NJ 07004-2105

If you ship the product • • •

Pack your JVC unit in the original carton or one of equivalent size and strength. Enclose, with the unit, a letter stating the problem or symptom that exists and also a copy of the receipt or bill of sale you received when you purchased your JVC unit. Print your home return address on the outside and the inside of the carton. Send to the appropriate JVC Factory Service Center as listed above.

Don't service it yourself.

CAUTION

To prevent electrical shock, do not open the cabinet. No user serviceable parts inside.
Refer servicing to qualified service personnel.

ACCESSORIES

To purchase accessories for your JVC product, you may contact your local JVC Dealer.
Or from the 48 Continental United States call toll free : 800-882-2345

(0694)

Specifications

Amplifier/tuner (RX-EX70)

Output Power	**20 watts per channel, min. RMS, both channels driven, into 6 ohms from 70 Hz to 20 kHz, with no more than 0.9% total harmonic distortion.**
Total Harmonic Distortion (6 ohms, 1 kHz)	0.08% at 14 watts output (* Measured by JVC Audio Analysis System)
Audio Input Sensitivity/Impedance (1 kHz)	
	CD, MD 260 mV/49 kohms
	TAPE 290 mV/54 kohms
	AUX 370 mV/49 kohms
Audio output level/Inpedance (1 kHz)	
	TAPE, MD 210 mV/400 ohms
	SUB-WOOFER OUT 1.8V/1k ohms
Speaker terminals	
Impedance	6 – 16 ohms
Tuner Section	
FM Tuner	Tuning Range 87.5 – 108.0 MHz
AM Tuner	Tuning Range 530 – 1710 kHz
General	
Dimensions	200 × 80 × 323.4 mm (W/H/D) (7-7/8 × 3-3/16 × 12-3/4 inches)
Mass	3.3 kg (7.3 lbs)
Power Specifications	
Power Requirements	AC 120 V∿, 60 Hz
Power Consumption	48 watts (at operation) 13 watts (in standby mode)

CD Player (XL-EX70)

CD Capacity	3 CDs
Dynamic Range	95 dB
Signal-To-Noise Ratio	100 dB
Wow And Flutter	Unmeasurable
General	
Dimensions	200 × 80 × 310 mm (W/H/D) (7-7/8 × 3-3/16 × 12-1/4 inches)
Mass	2.8 kg (6.2 lbs)
Power Specifications	
Power Requirements	AC 120 V∿, 60 Hz
Power Consumption	8 watts (at operation) 3 watts (in standby mode)

Accessories

AC power cord (1)
Stereo Audio pin cord (1)
Compu Link cable (1)
AM loop antenna (1)
FM wire antenna (1)
Batteries (R6P(SUM-3)/AA (15F)) (2)
Remote Control (1)

Design and specifications are subject to change without notice.

JVC

VICTOR COMPANY OF JAPAN, LIMITED

EN

0598TTMWSTOZK

JVC LIMITED WARRANTY AUDIO-1

JVC COMPANY OF AMERICA warrants this product and all parts thereof, except as set forth below ONLY TO THE ORIGINAL PURCHASER AT RETAIL to be FREE FROM DEFECTIVE MATERIAL AND WORKMANSHIP from the date of original retail purchase for the period as shown below. ("The Warranty Period.")

PARTS	LABOR
1YR	1YR

THIS LIMITED WARRANTY IS VALID ONLY IN THE FIFTY(50) UNITED STATES, THE DISTRICT OF COLUMBIA AND IN COMMONWEALTH OF PUERTO RICO.

WHAT WE WILL DO:

If this product is found to be defective, JVC will repair or replace defective parts at no charge to the original owner. Such repair and replacement services shall be rendered by JVC during normal business hours at JVC authorized service centers. Parts used for replacement are warranted only for the remainder of the Warranty Period. All products and parts thereof may be brought to a JVC authorized service center on a carry-in basis except for Television sets having a screen size 25 inches and above which are covered on an in-home basis.

WHAT YOU MUST DO FOR WARRANTY SERVICE:

Return your product to a JVC authorized service center with a copy of your bill of sale. For your nearest JVC authorized service center, please call toll free: (800)537-5722.

If service is not available locally, box the product carefully, preferably in the original carton, and ship, insured, with a copy of your bill of sale plus and letter of explanation of the problem to the nearest JVC Factory Service Center, the name and location of which will be given to you by the toll-free number.

If you have any questions concerning your JVC Product, please contact our Customer Relations Department.

WHAT IS NOT COVERED:

This limited warranty provided by JVC does not cover:

1. Products which have been subject to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, or if repaired or serviced by anyone other than a service facility authorized by JVC to render such service, or if affixed to any attachment not provided with the products, or if the model or serial number has been altered, tampered with, defaced or removed;
2. Initial installation and installation and removal for repair;
3. Operational adjustments covered in the Owner's Manual, normal maintenance, video and audio head cleaning;
4. Damage that occurs in shipment, due to act of God, and cosmetic damage;
5. Signal reception problems and failures due to line power surge;
6. Video Pick-up Tubes/CCD Image Sensor, Cartridge, Stylus(Needle) are covered for 90 days from the date of purchase;
7. Accessories;
8. Batteries (except the Rechargeable Batteries are covered for 90 days from the date of purchase);

There are no express warranties except as listed above.

THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MARCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

JVC SHALL NOT BE LIABLE FOR THE LOSS OF USE THE PRODUCT, INCONVENIENCE, LOSS OR ANY OTHER DAMAGES, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, DAMAGE TO TAPES, RECORDS OR DISCS) RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE WARRANTY PERIOD SET FORTH ABOVE.

Some states do not allow the exclusion of incidental or consequential damages or limitations on how long an implied warranty last, so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

JVC COMPANY OF AMERICA
DIVISION OF US JVC CORP.
41 Slater Drive
Elmwood Park, New Jersey 07407

REFURBISHED PRODUCTS CARRY A SEPARATE WARRANTY, THIS WARRANTY DOES NOT APPLY. FOR DETAILS OF REFURBISHED PRODUCT WARRANTY, PLEASE REFER TO THE REFURBISHED PRODUCT WARRANTY INFORMATION PACKAGED WITH EACH REFURBISHED PRODUCT.

For customer use:

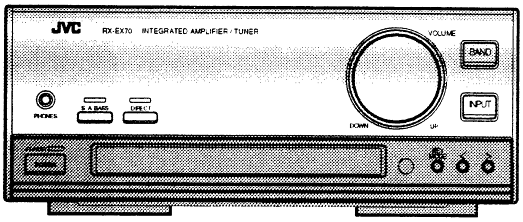
Enter below the Model No. and Serial No. which is located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No.: ______________________ Serial No.: ______________________

Purchase date: ______________________ Name of dealer: ______________________

INTEGRATED COMPACT SYSTEM

CA-EX70
CA-EX70R


JVC
RX-EX70 INTEGRATED AMPLIFIER / TUNER
VOLUME
BAND
INPUT
PHONES
S.A.BASS
DIRECT
DOWN
UP

Area Suffix

C	Canada
J	U.S.A.
U	Other Areas
UB	Hong Kong
UF	China
US	Singapore
UT	Taiwan
B	U.K
E	Continental Europe
EN	Northan Europe
EE	Eastern Europe

- Contents -

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Description of Main ICs ---------- 2-5
Standard Schematic Diagrams ---------- 2-13
Location of P. C. Board Parts ---------- 2-19

Removal of Main Parts

(1) Removing the top cover

1. Remove the two screws A retaining both sides of the top cover and four screws A retaining the rear sides of the cover.
2. While raising the rear section and slightly spreading the top cover, pull it out from the front panel.

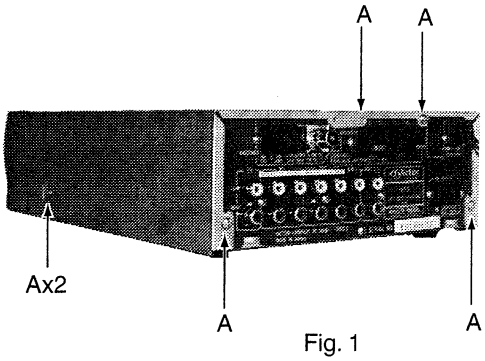


Fig. 1

(2) Removing the front panel assembly

1. Remove the top cover.
2. From both sides of the bottom of the body, remove the three screws B retaining the front panel assembly.
3. Pull out the card wire (CN701) and flat wire (CN703).
4. By removing the one screw C, disconnect the earth wire.
5. By removing the three hooks, disassemble the front panel assembly.

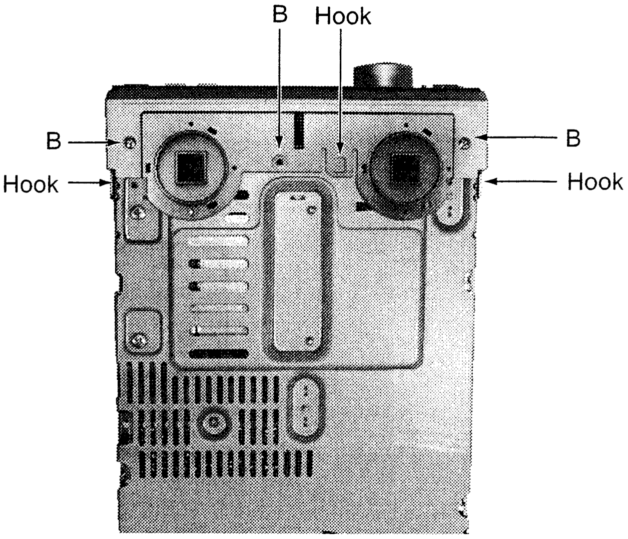


Fig. 2

(3) Removing the rear panel

1. Remove the top cover.
2. Pull out the cord bushing with cutting pliers, etc.

CAUTION: In this case, the cord bushing should be pulled out so carefully as not to cause any damage to the cord by protecting it with a sheet, etc.

3. Remove the eleven screws D retaining the rear panel.

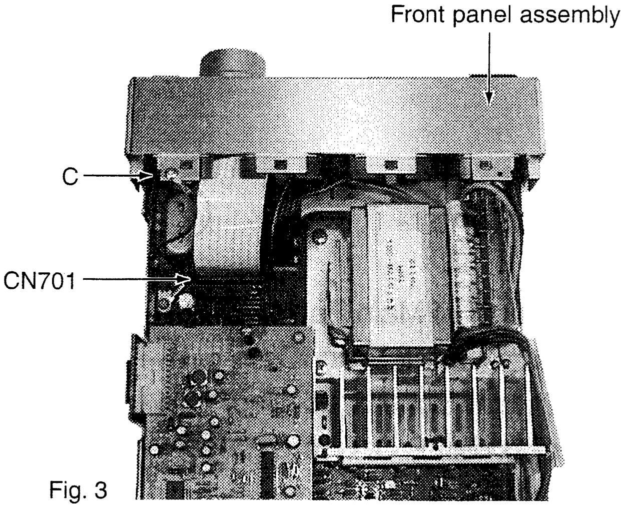


Fig. 3

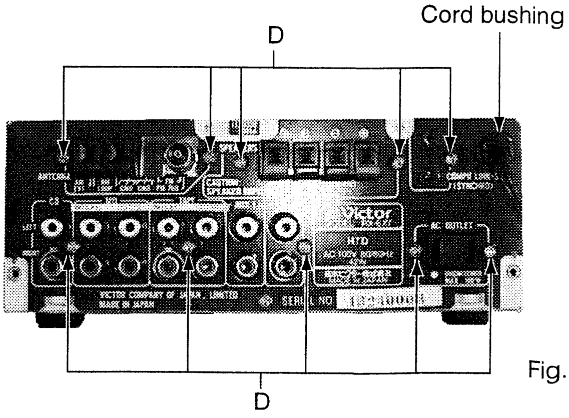


Fig. 4

(4) Removing the front cover and system control P.C. board

1. Remove the top cover and front panel.
2. Remove the main volume and the main volume nut.
3. By removing the four screws B retaining the system control P.C. board.
4. After removing the four hooks A, remove the two hooks B. For assembly, on the other hand, set the hooks A after setting the hooks B.

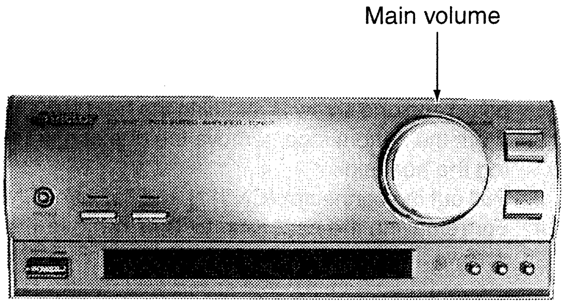

Main volume

Fig. 5

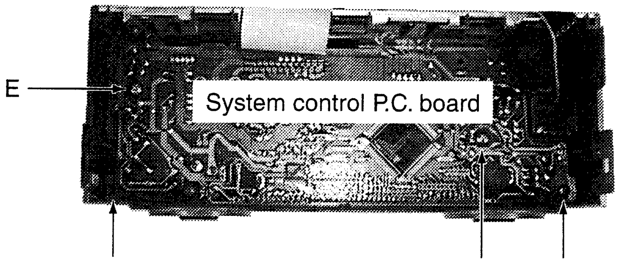

E
System control P.C. board
E
E
E

Fig. 6

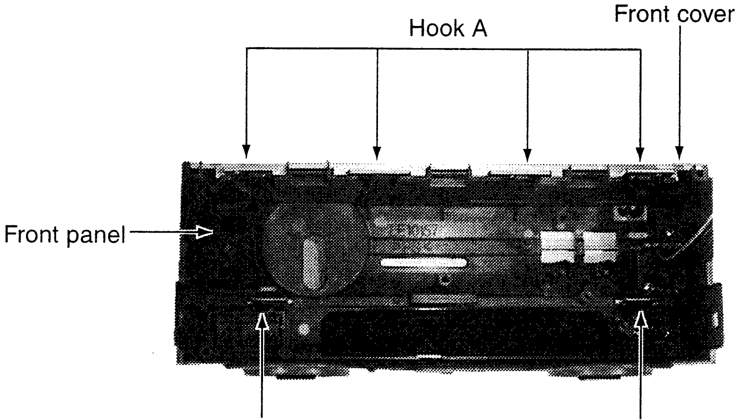

Hook A
Front cover
Front panel
Hook B
Hook B

Fig. 7

(5) Removing the tuner P.C. board

1. Remove the rear panel.
2. Remove the one screw F retaining the tuner P.C. board.
3. While raising the hook of the connector (CN111), remove the tuner P.C. board.

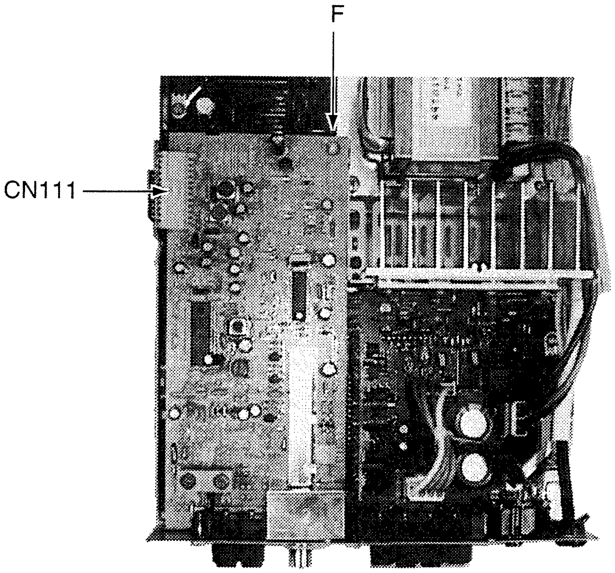


Fig. 8

(6) Removing the P.C. board

1. Remove the three screws G retaining the main P.C. board and one screw H retaining the heat sink bracket.
2. From the bottom face, remove the one screw I retaining the heat sink.
3. Pull out the connector (CN011) and flat wire (CN012).
4. For removing the heat sink, further remove the four screws J and one screw M.

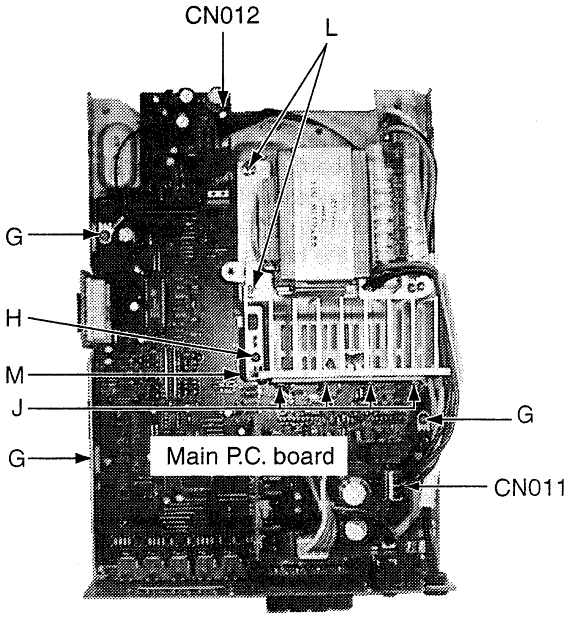

CN012
L
G
H
M
J
G
Main P.C. board
G
CN011

Fig. 9

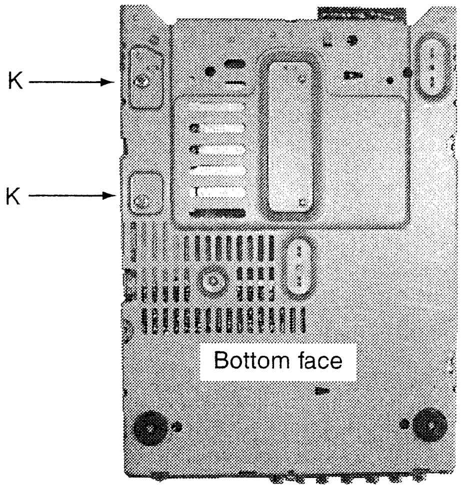
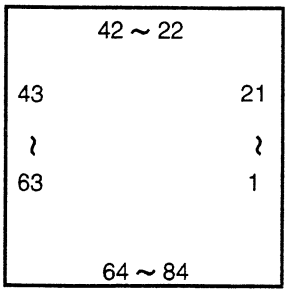

K
K
Bottom face

Fig. 10

Description of Main ICs

■ MN173222JABG(IC501): AMP/TUNER/DISPLAY controler

1. External View



2. Key Matrix

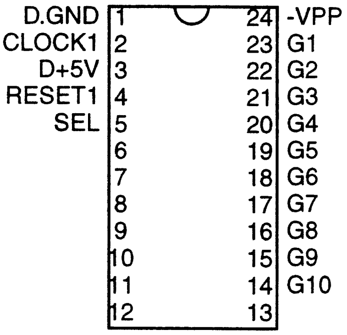
	KEY IN 0	KEY IN 1	KEY IN 2	KEY IN 3
KEY OUT 0	POWER	DIRECT	BASS	BAND
KEY OUT 1	INPUT	KEY MODE	«	»

3. Terminal Description

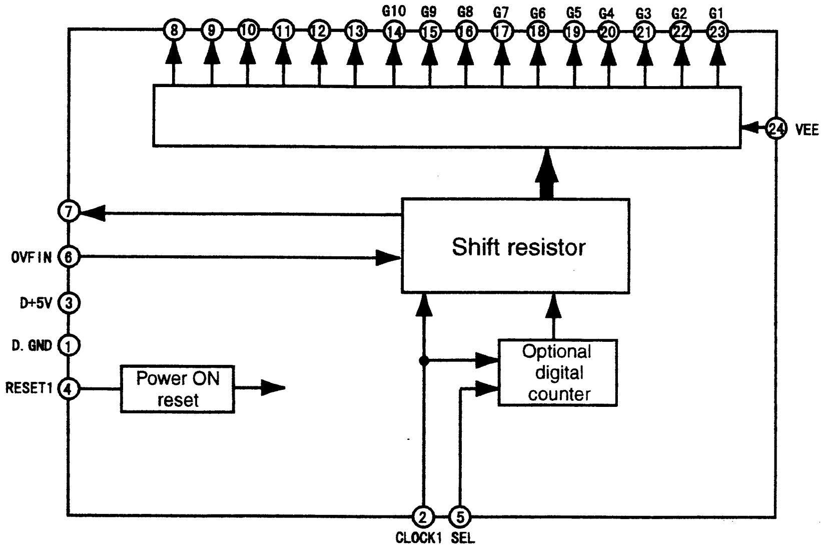
PIN No.	Symbo	I/O	Description of function	PIN No.	Symbo	I/O	Description of function
1~22	S1~S22	O	FL segment control output	60	TMUTE	I/O	AM/FM IF buffer input and mute input
23	-VPP	-	Power supply terminal	61	TDATA	O	Data output terminal to IC121
24~36	S23~S35	O	FL segment control output	62	TCLK	O	Clock signal output terminal to IC121
37		-	Not used	63	TCE	O	Chip enable signal to IC121; ON at "H"
38		-	Not used				
39		-	Not used	64	IFDATA	I	Data signal input terminal from IC121
40	STB	O	Strobe signal output to IC701	65	DCSO	O	DSC signal output terminal
41	CLOCK	O	Clock signal output to IC701	66	DCSI	I	DSC signal input terminal
42	SDA	O	Serial data output to IC708	67	BASSI	O	DSC signal output terminal
43	DATA	O	Data output to IC701	68	/RESET	I	System reset signal input
44	SCL	O	Serial clock output to IC708	69	X1	-	Connected to GND
45		-	Not used	70	X2	-	Not used
46		-	Not used	71	VSS	-	Connected to GND
47	/P.ON	O	Standby indicator control "H": ON; "L": OFF	72	OSC2	-	Oscillator terminal (6MHz)
				73	OSC1	-	Oscillator terminal (6MHz)
48		-	Not used	74	VDD	-	Power supply terminal
49	/REM	I	Remote control signal input	75	JOG1	I	Jog pulse input 1
50	TKEYI0	I	Key matrix input	76	JOG2	I	Jog pulse input 2
51	TKEYI3	I	Key matrix input	77	/INH	I	Direct inhibit signal input
52	TKEYI2	I	Key matrix input	78	DIRECT	O	To indicator control
53	TKEYI1	I	Key matrix input	79		-	Not used
54	PRT	I	Protector signal input	80	SEL	O	Select signal output to IC502
55	SPK	O	Speaker ON/OFF control	81	RESET1	O	IReset signal output to IC502
56	S.MUTE	O	Source mute signal output	82	CLOCK1	O	Clock signal output to IC502
57	HPSW	I	Headphone signal switch input	83	TKEYO0	O	Key matrix output
58	/STEREO	I	Stereo indicator drive input	84	TKEYO1	O	Key matrix output
59	/TUNED	I	Indicator drive input during tuning				

■ M35501FP(IC502):FL controler

1. External View


D.GND 1
CLOCK1 2
D+5V 3
RESET1 4
SEL 5
6
7
8
9
10
11
12
24 -VPP
23 G1
22 G2
21 G3
20 G4
19 G5
18 G6
17 G7
16 G8
15 G9
14 G10
13

2. Block Diagram


G10 G9 G8 G7 G6 G5 G4 G3 G2 G1
8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 VEE
7
OVFIN 6
D+5V 3
D. GND 1
RESET1 4
Power ON reset
Shift resistor
Optional digital counter
2 5
CLOCK1 SEL

3. Terminal Description

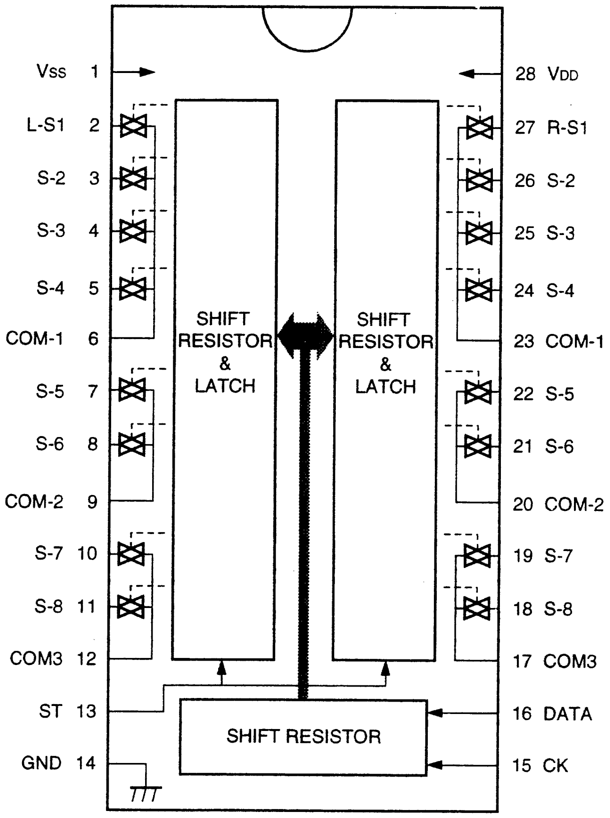
PIN No.	Symbol	I/O	Description of function
1	D.GND	-	Connected to GND
2	CLOCK1	I	Clock signal input terminal to IC501
3	D+5V	-	Power supply terminal
4	RESET1	I	Reset signal input terminal from IC501
5	SEL	I	Select signal input terminal from IC501
6	OVFIN	I	Overflow signal input terminal
7~13		-	Not used
14~23	G10~G1	O	FL grit control output
24	-VPP	-	Power supply terminal

■ TC9164AN(IC701) : Electronic Volume

1.Function

This volume is designed to switching on and off the switches S1 - S8 according to control from the microcomputer.

2. Terminal Arrangement and Block Diagram


Vss 1
L-S1 2
S-2 3
S-3 4
S-4 5
COM-1 6
S-5 7
S-6 8
COM-2 9
S-7 10
S-8 11
COM3 12
ST 13
GND 14
28 VDD
27 R-S1
26 S-2
25 S-3
24 S-4
23 COM-1
22 S-5
21 S-6
20 COM-2
19 S-7
18 S-8
17 COM3
16 DATA
15 CK
SHIFT RESISTOR & LATCH
SHIFT RESISTOR & LATCH
SHIFT RESISTOR

3.Relation between the Respective Switches and Data

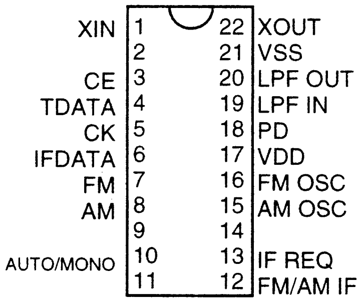
The switches S1 - S8 will switch on the position corresponding to "1" depending on bits 1 - 8 of the serial data.

The switches S9 and S10 will turn on the right and left sides, respectively. The TC9162, TC9163 and TC9164 will be identified and selected according to bits 11 - 14.

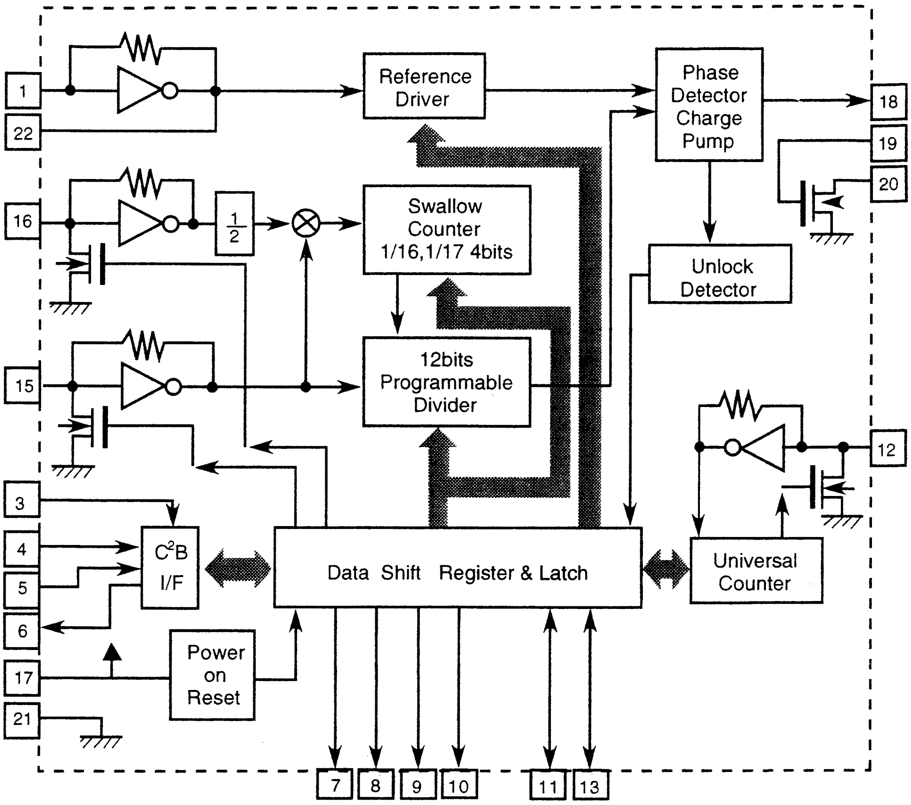
	Switch select bit							Right	Left		Switch select bit			
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
TC9162N	With the switches S-1 - S8, the position corresponding to "1" will be switched on according to bits 1 - 8 of the serial data.										0	0	0	0
TC9163N	With the switches S-1 - S8, the positio corresponding to "1" will be switched on according to bits 1 - 8 of the data.										1	0	0	0
TC9164N	With the switches S-1 - S8, the position corresponding to "1" will be switched on according to bits 1 - 8 of the serial data.										0	1	0	0

■ LC72131(IC121):PLL frequency synthesizer for electronic tuning

1. External View


XIN 1
2
CE 3
TDATA 4
CK 5
IFDATA 6
FM 7
AM 8
9
AUTO/MONO 10
11
22 XOUT
21 VSS
20 LPF OUT
19 LPF IN
18 PD
17 VDD
16 FM OSC
15 AM OSC
14
13 IF REQ
12 FM/AM IF

2. Block Diagram

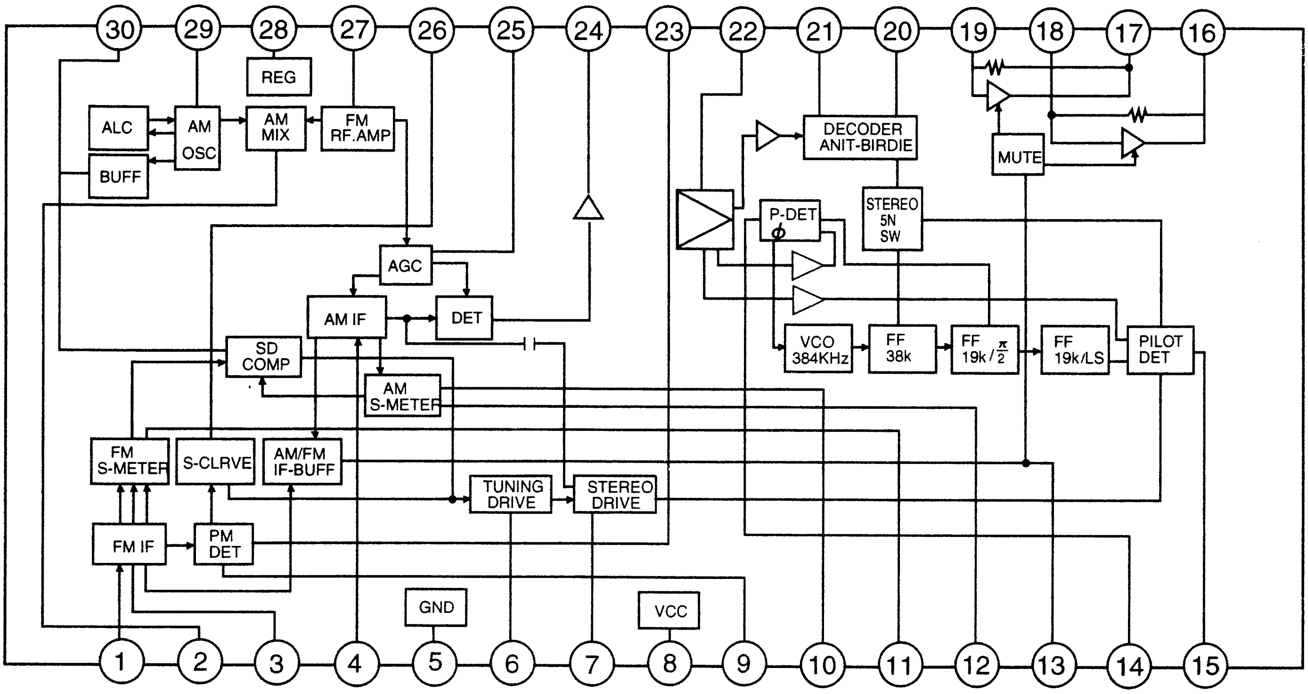

1
22
16
15
3
4
5
6
17
21
Reference Driver
Phase Detector Charge Pump
Swallow Counter 1/16,1/17 4bits
12bits Programmable Divider
Unlock Detector
1/2
C²B I/F
Data Shift Register & Latch
Universal Counter
Power on Reset
18
19
20
12
7
8
9
10
11
13

3. Pin Functions

Pin No.	Symbol	I/O	Description of function	Pin No.	Symbol	I/O	Description of function
1	Xin	I	Crystal oscillator connector terminal (7.2MHz)	12	FM/AM IF	I	Universal counter signal input
2		--	Not used	13	IF REQ	O	IF signal request is output.
3	CE	I	"H" when inputting or outputting the data to the #4 pin (inputting) or #6 pin (outputting).	14		I	Not used
4	PLLDA	I	Input terminal for receiving control data from controller	15	AMOSC		AM station section oscillator signal input
5	PLLCK	I	Synchronizing signal input terminal used for exchanging data between controller	16	FM OSC	I	FM station section oscillator signal input
6	IFDATA	O	Output terminal for sending data to controller	17	VDD	O	Power supply terminal
7	$\overline{FM}$	O	FM mode at "LOW"	18	PD	O	Charge pump output of PLL. "HIGH" or "LOW" when the station section oscillator frequency is higher or lower than the reference frequency, and floating when the station section oscillator frequency is equal to the reference frequency.
8	$\overline{MW}$	O	FM mode at "LOW"	19	LPF IN	I	Input for active low pass filter of PLL
9	—	O	Not used	20	LPF OUT	O	Output for active low pass filter of PLL
10	AUTO $\overline{MONO}$	O	MONO control output to IC102	21	VSS	--	Connected to GND
11		O	Not used	22	X out	O	Crystal oscillator connector terminal (7.2MHz)

■ LA1837(IC102): FM AM IF AMP & detector and FM MPX detector

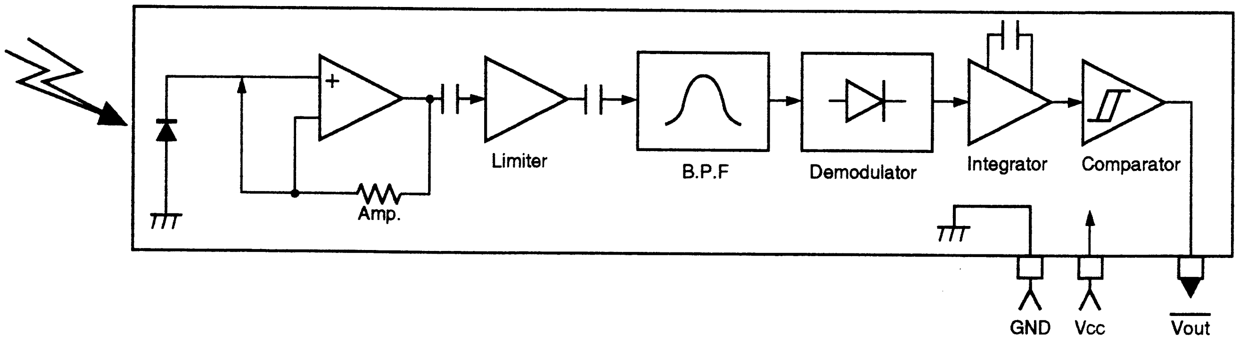
1. Block Diagram


30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
REG
ALC
AM
OSC
AM
MIX
FM
RF.AMP
BUFF
DECODER
ANIT-BIRDIE
MUTE
P-DET
ɸ
STEREO
5N
SW
AGC
AM IF
DET
VCO
384KHz
FF
38k
FF
19k/π/2
FF
19k/LS
PILOT
DET
SD
COMP
AM
S-METER
FM
S-METER
S-CLRVE
AM/FM
IF-BUFF
TUNING
DRIVE
STEREO
DRIVE
FM IF
PM
DET
GND
VCC
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

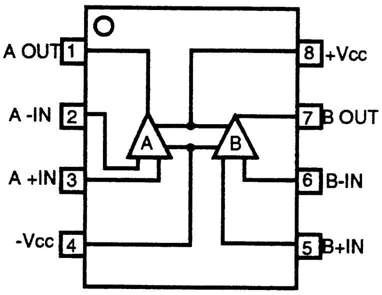
2. Terminal Description

Pin No.	Symbol	I/O	Description of function	Pin No.	Symbol	I/O	Description of function
1	FM IN	I	FM signal input	16	L OUT	O	Left side output
2	AM MIX	O	AM mixer output	17	R OUT	O	Right side output
3	FM IF	I	FM IF bypass	18	L IN	I	Left side post amp. input
4	AM IF	I	AM IF signal input	19	R IN	I	Right side post amp. input
5	GND	–	Ground terminal	20	RO	O	Right side multiplex output
6	TUNED	O	Indicator drive output for tuning	21	LO	O	Left side multiplex output
7	STEREO	O	Stereo indicator drive output "H": Monaural; "L": Stereo	22	IF IN	I	Multiplex signal input
8	VCC	–	Power supply terminal	23	FM OUT	O	FM tuning/tuner output
9	FM DET	–	FM detector coil connector terminal	24	AM DET	O	AM detector output
10	AM SD	–	AM ceramic filter terminal	25	AM AGC	I	AM AGC voltage input
11	FM VSM	O	For determining FM tuning sensitivity	26	AFC	–	Voltage output for FM-AFC (automatic frequency ontrol)
12	AM VSM	O	For determining AM tuning sensitivity	27	AM RF	I	AM RF signal input
13	MUTE	I/O	AM/FM IF buffer output and mute input	28	REG	O	For controlling the band width of FM
14	FM/AM	I	Selection of AM/FM; "H": AM; "L": FM	29	AM OSC	–	AM station section oscillator
15	MONO/ST	O	Monaural and stereo selection; "H": Stereo; "L": Monaural	30	OSC BUFFER	O	AM station section oscillator

■ GP1U271X(IC520) : Remote control signal receiving IC


+
Limiter
B.P.F
Demodulator
Integrator
Comparator
Amp.
GND
Vcc
$\overline{\text{Vout}}$

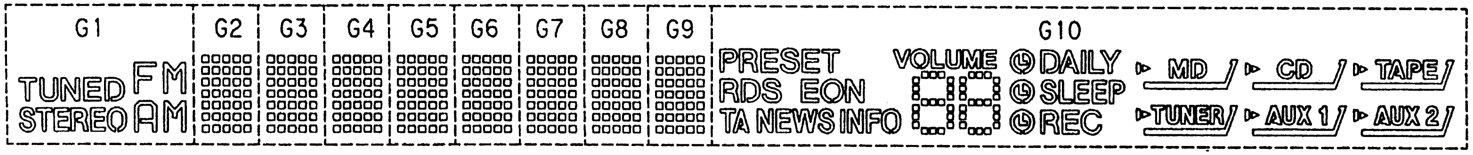
■ NJM5532D(IC702.IC301):Dual Op. Amp.


A OUT 1
A -IN 2
A +IN 3
-Vcc 4
8 +Vcc
7 B OUT
6 B-IN
5 B+IN
A
B

Description of FL indicator tube internals

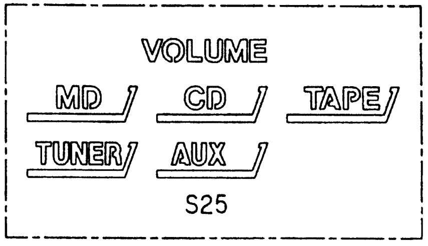
■ QLF0029-001

1. Splitting and internal connection of grid/segment

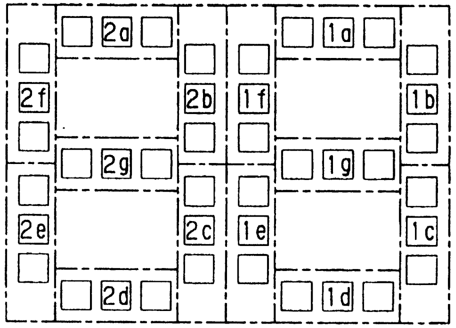

G1
G2
G3
G4
G5
G6
G7
G8
G9
G10
TUNED
STEREO
FM
AM
PRESET
RDS EON
TA NEWS INFO
VOLUME
DAILY
SLEEP
REC
MD
CD
TAPE
TUNER
AUX 1
AUX 2

	G1	G2~G9	G10
S0		S0	AUX2/
S1		S1	(AUX) 1
S2		S2	▷(AUX2)
S3		S3	▷(AUX1)
S4		S4	▷(TUNER)
S5		S5	INFO
S6		S6	NEWS
S7		S7	TA
S8		S8	1d
S9		S9	1c
S10		S10	1e
S11		S11	1g
S12		S12	1b
S13		S13	1f
S14		S14	1a
S15		S15	EON
S16		S16	2d
S17		S17	2c

	G1	G2~G9	G10
S18		S18	2e
S19		S19	2g
S20		S20	2b
21		21	2f
S22		S22	2a
S23		S23	RDS
S24		S24	PRESET
S25		S25	S25
S26		S26	◷ (REC)
S27		S27	◷(SLEEP)
S28		S28	◷(DAILY)
S29		S29	REC
S30		S30	SLEEP
S31	AM	S31	DAILY
S32	STEREO	S32	▷(TAPE)
S33	FM	S33	▷ (CD)
S34	TUNED	S34	▷ (MD)


VOLUME
MD
CD
TAPE
TUNER
AUX
S25

G10


2a
2f
2b
2g
2e
2c
2d
1a
1f
1b
1g
1e
1c
1d

G10

S34	S33	S32	S31	S30
S29	S28	S27	S26	S25
S24	S23	S22	S21	S20
S19	S18	S17	S16	S15
S14	S13	S12	S11	S10
S9	S8	S7	S6	S5
S4	S3	S2	S1	S0

G2~G9

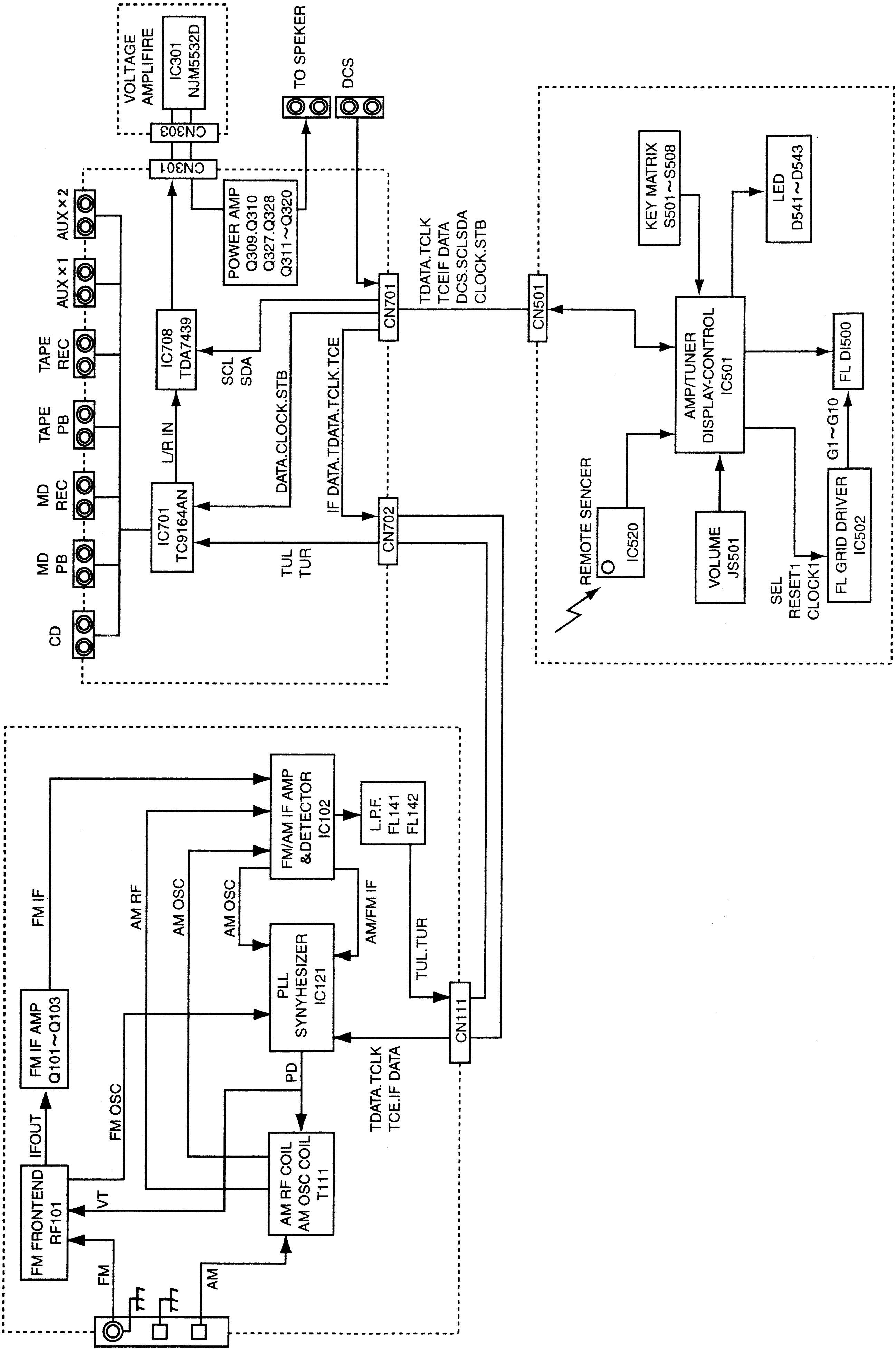
2. Terminal Connection

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Assignment	F1	F1	NL	D	S34	S33	S32	S31	S30	S29	S28	S27	S26	S25	S24	S23	S22	S21	S20	S19	S18	S17	S16	S15	S14	S13	S12

Pin No.	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Assignment	S11	S10	S9	S8	S7	S6	S5	S4	S3	S2	S1	S0	NL	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	H	NL	F2	F2

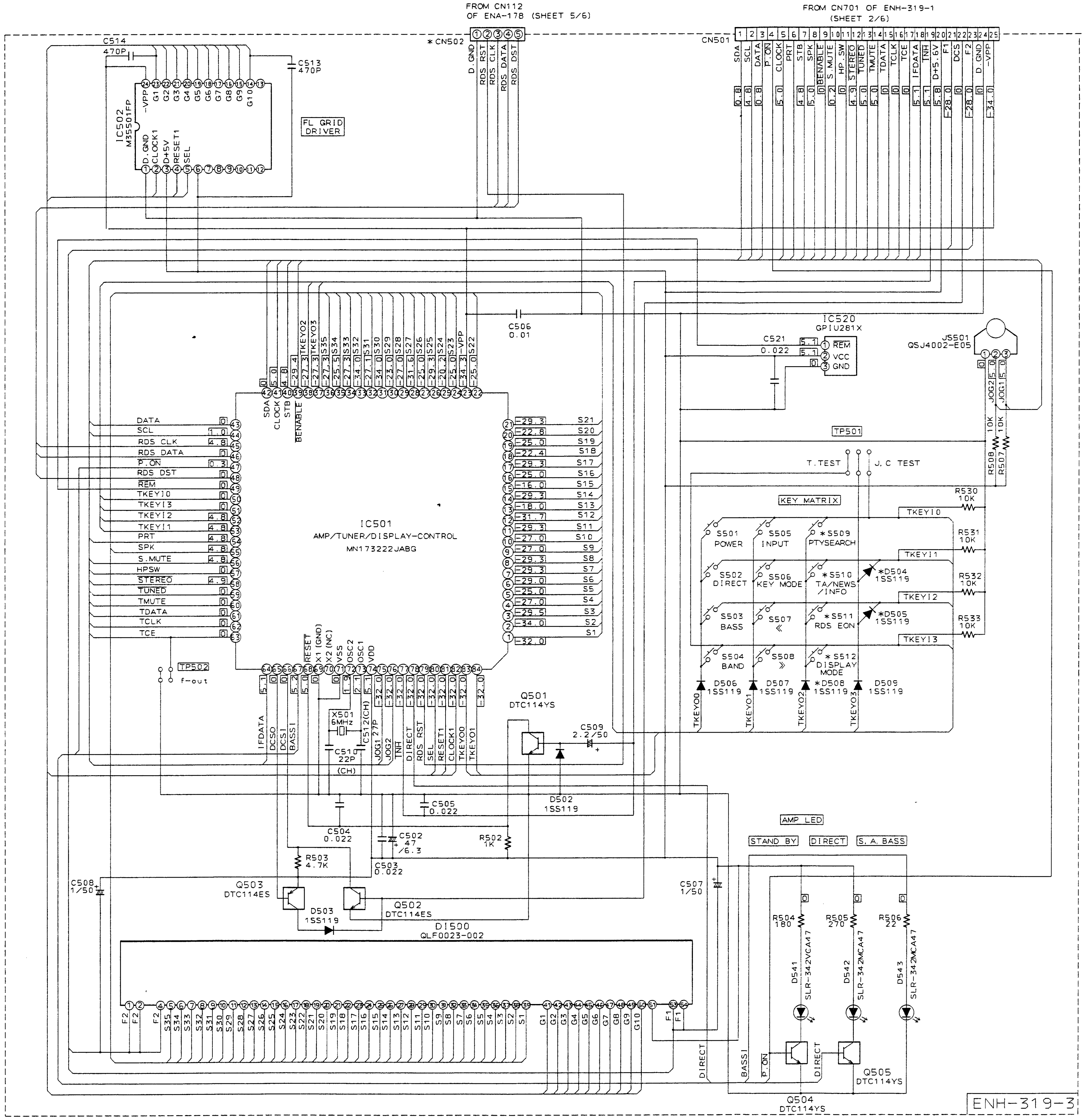
F1,F2:Filament G1~G10:Grid S0~S34:Anode D: Connect externally to F1 NL:No Lead
H: Normal current passing grid

■ Block Diagram


VOLTAGE AMPLIFIRE
IC301
NJM5532D
CN303
CN301
TO SPEKER
DCS
AUX×2
AUX×1
TAPE REC
TAPE PB
MD REC
MD PB
CD
POWER AMP
Q309.Q310
Q327.Q328
Q311~Q320
IC708
TDA7439
SCL
SDA
L/R IN
IC701
TC9164AN
DATA.CLOCK.STB
IF DATA.TDATA.TCLK.TCE
TUL
TUR
CN701
CN702
TDATA.TCLK
TCEIF DATA
DCS.SCLSDA
CLOCK.STB
CN501
KEY MATRIX
S501~S508
LED
D541~D543
AMP/TUNER
DISPLAY-CONTROL
IC501
FL DI500
G1~G10
FL GRID DRIVER
IC502
SEL
RESET1
CLOCK1
VOLUME
JS501
REMOTE SENCER
IC520
FM/AM IF AMP
&DETECTOR
IC102
L.P.F.
FL141
FL142
FM IF
AM RF
AM OSC
AM OSC
AM/FM IF
PLL
SYNYHESIZER
IC121
TUL.TUR
CN111
TDATA.TCLK
TCE.IF DATA
FM IF AMP
Q101~Q103
IFOUT
FM OSC
PD
FM FRONTEND
RF101
VT
AM RF COIL
AM OSC COIL
T111
FM
AM

Schematic Diagrams

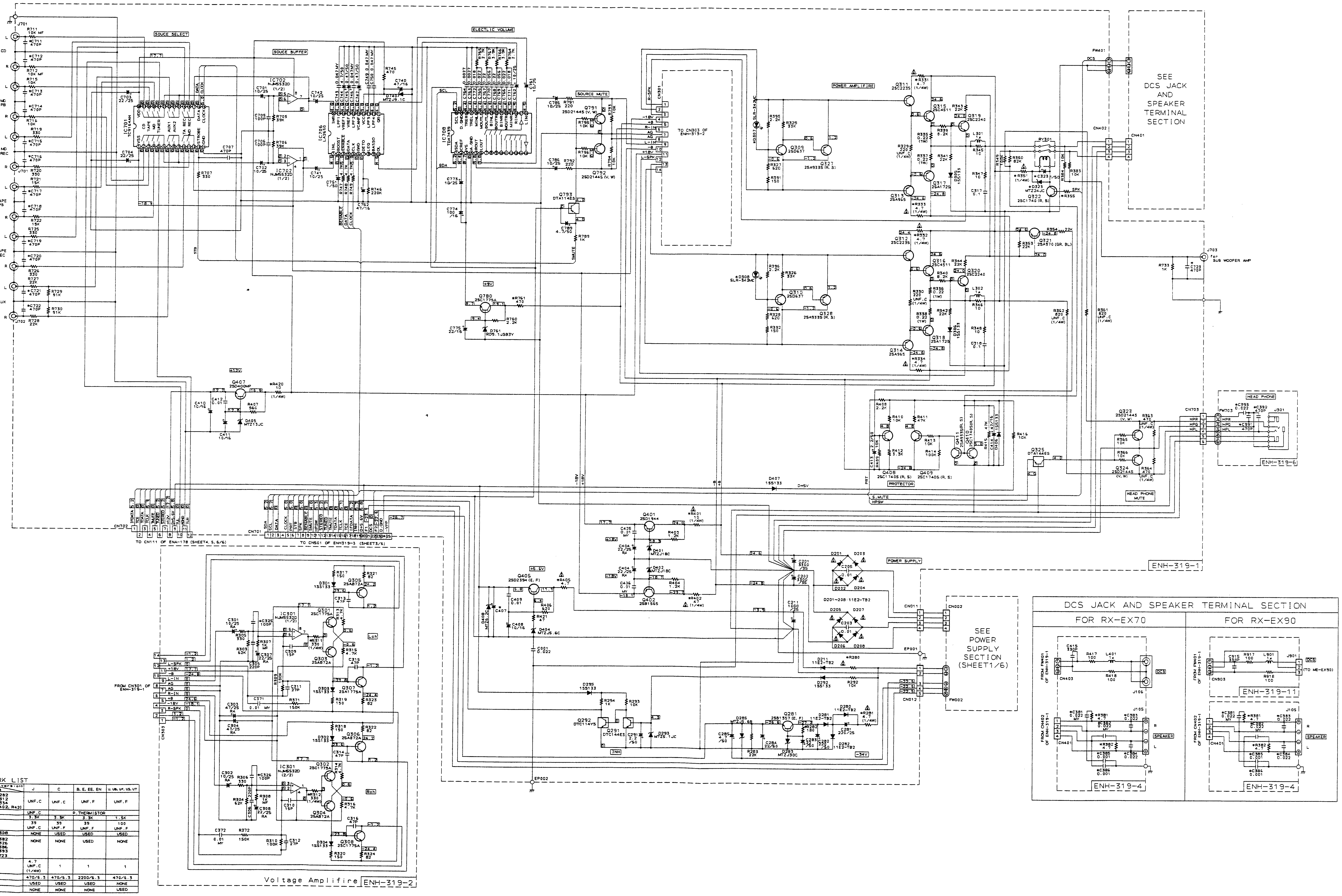
stem Control


FROM CN112
OF ENA-178 (SHEET 5/6)
FROM CN701 OF ENH-319-1
(SHEET 2/6)
*CN502
CN501
D.GND
RDS RST
RDS CLK
RDS DATA
RDS DST
SDA
SCL
DATA
P.ON
CLOCK
PRT
STB
SPK
BENABLE
S.MUTE
HP.SW
STEREO
TUNED
TMUTE
TDATA
TCLK
TCE
IFDATA
TNH
D+5.6V
F1
DCS
F2
-VPP
C514
470P
C513
470P
IC502
M35501FP
FL GRID
DRIVER
CLOCK1
D+5V
RESET1
SEL
C506
0.01
IC520
GP1U281X
REM
VCC
GND
C521
0.022
JS501
QSJ4002-E05
JOG2
JOG1
R508
10K
R507
10K
TP501
T.TEST
J.C TEST
KEY MATRIX
R530
10K
TKEY10
R531
10K
TKEY11
R532
10K
TKEY12
R533
10K
TKEY13
S501
POWER
S505
INPUT
*S509
PTYSEARCH
S502
DIRECT
S506
KEY MODE
*S510
TA/NEWS
/INFO
*D504
1SS119
S503
BASS
S507
≪
*S511
RDS EON
*D505
1SS119
S504
BAND
S508
≫
*S512
DISPLAY
MODE
D506
1SS119
D507
1SS119
*D508
1SS119
D509
1SS119
TKEY00
TKEY01
TKEY02
TKEY03
IC501
AMP/TUNER/DISPLAY-CONTROL
MN173222JABG
TP502
f-out
RESET
X1 (GND)
X2 (NC)
VSS
OSC2
OSC1
VDD
X501
6MHz
C512(CH)
27P
C511
22P
(CH)
IFDATA
DCSO
DCS1
BASS1
JOG1
JOG2
TNH
DIRECT
RDS RST
SEL
RESET1
CLOCK1
TKEY00
TKEY01
Q501
DTC114YS
C509
2.2/50
D502
1SS119
C505
0.022
C504
0.022
C502
47
/6.3
C503
0.022
R502
1K
R503
4.7K
Q503
DTC114ES
Q502
DTC114ES
D503
1SS119
C508
1/50
C507
1/50
DI500
QLF0023-002
AMP LED
STAND BY
DIRECT
S.A.BASS
R504
180
R505
270
R506
22
D541
SLR-342VCA47
D542
SLR-342MCA47
D543
SLR-342MCA47
Q504
DTC114YS
Q505
DTC114YS
P.ON
ENH-319-3

* MARK LIST

	J, C	B, E, EE, EN	U, UT, UF US, UB
D504	NONE	USED	USED
D505	NONE	NONE	USED
D508	NONE	USED	NONE
S509~512	NONE	USED	NONE
CN502	NONE	USED	NONE

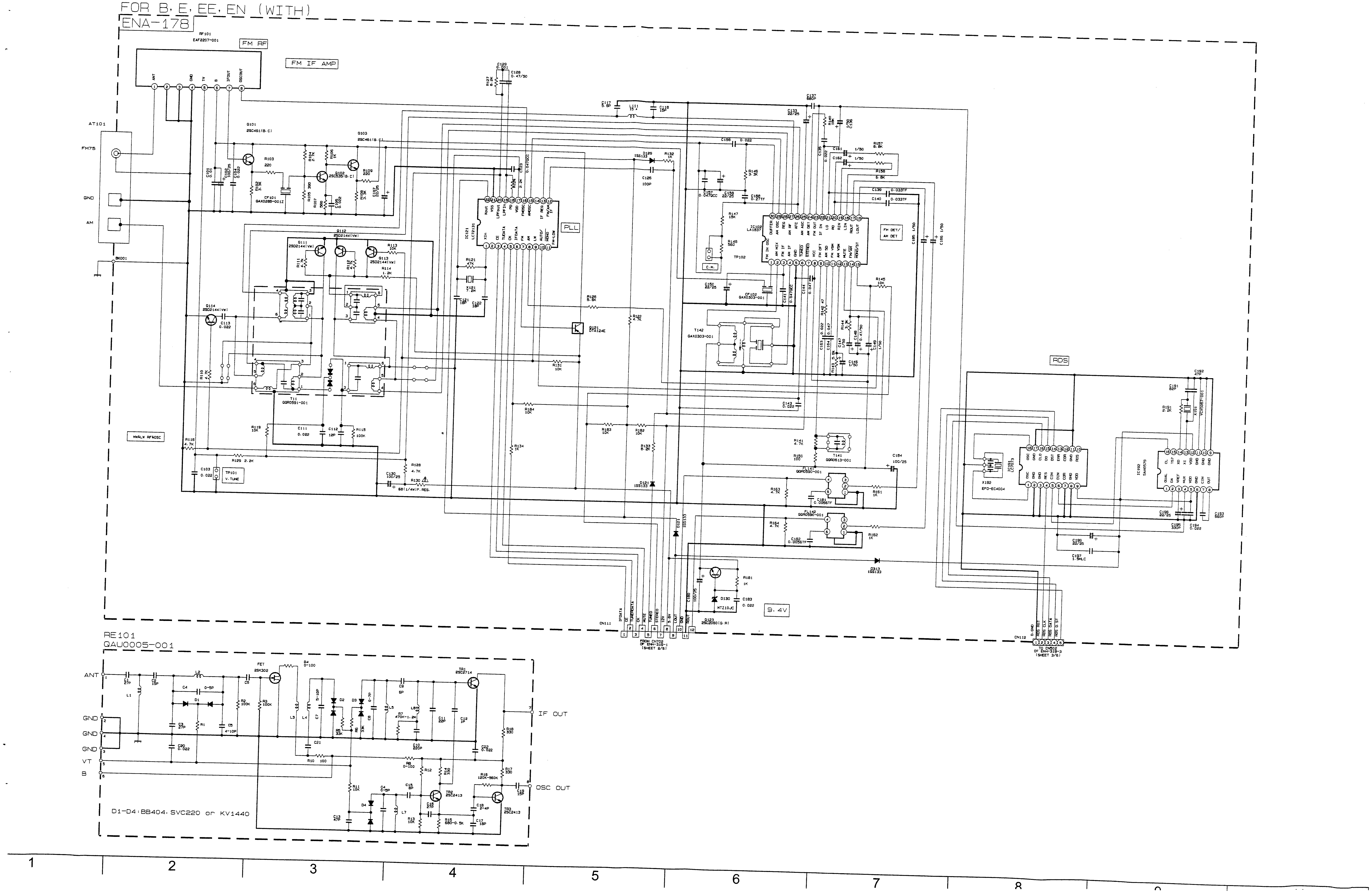
'0] Main Amplifier


SOUCE SELECT
SOUCE BUFFER
ELECTLIC VOLUME
SOURCE MUTE
POWER AMPLIFIRE
PROTECTOR
HEAD PHONE MUTE
HEAD PHONE
POWER SUPPLY
SEE DCS JACK AND SPEAKER TERMINAL SECTION
TO CN303 OF ENH-319-2
FOR SUB WOOFER AMP
SEE POWER SUPPLY SECTION (SHEET1/6)
TO CN111 OF ENA-178 (SHEET4,5,6/6)
TO CN501 OF ENH-319-3 (SHEET3/6)
FROM CN301 OF ENH-319-1
Voltage Amplifire
ENH-319-1
ENH-319-2
ENH-319-6
DCS JACK AND SPEAKER TERMINAL SECTION
FOR RX-EX70
FOR RX-EX90
ENH-319-4
ENH-319-11
J701
J702
J703
CN701
CN702
CN703
CN401
CN402
CN403
CN011
CN012
CN002
FW002
FW401
IC701
IC702
IC705
IC706
IC301
Lch
Rch
SPEAKER
DCS

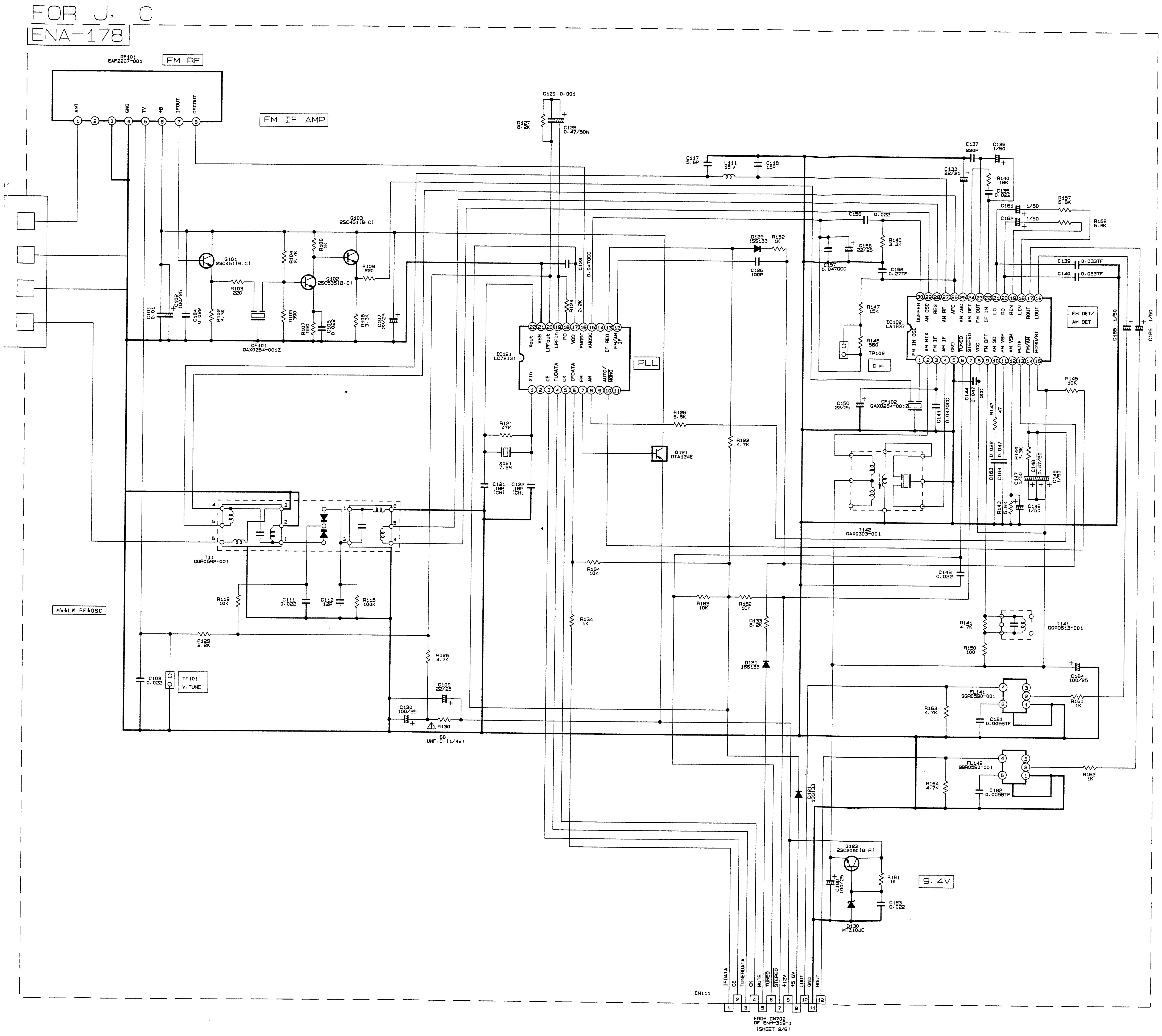
*MARK LIST

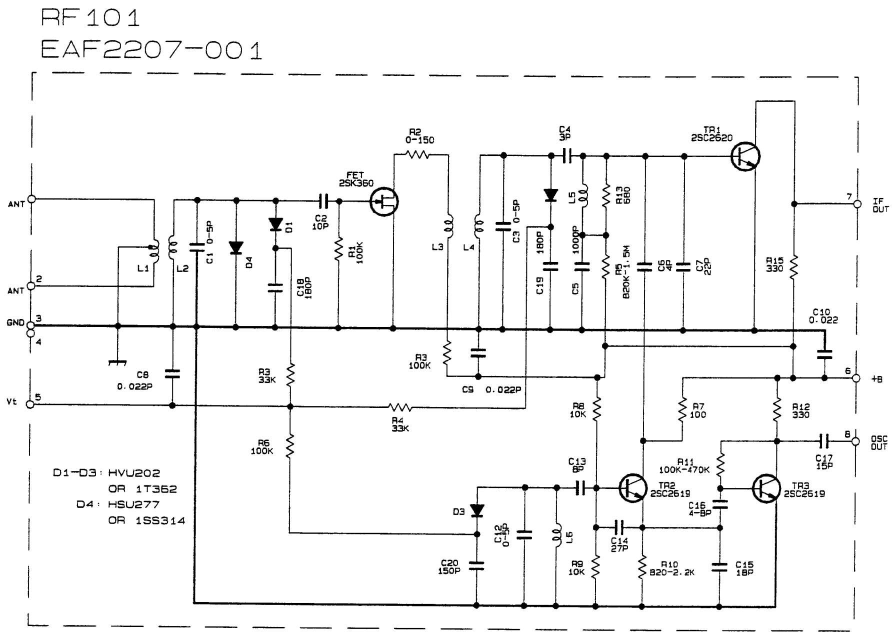
symbols \ versions	J	C	B, E, EE, EN	U, UB, UF, US, UT
R281, R282 R311, R312 R331~R334 R401, R402, R420	UNF.C	UNF.C	UNF.F	UNF.F
R405	UNF.C	P.THERMISTOR		
R355	3.3K	3.3K	3.3K	1.5K
R351	39 UNF.C	39 UNF.F	39 UNF.F	100 UNF.F
D307, D308	NONE	USED	USED	USED
R381, R382 C325, C326 C381~C386 C391~C393 C711~C723	NONE	NONE	USED	NONE
R280	4.7 UNF.C (1/4W)	1	1	1
C407	470/6.3	470/6.3	2200/6.3	470/6.3
C323	USED	USED	USED	NONE
D323	NONE	NONE	NONE	USED

-EX70] Tunner for B, E, EE, EN


FOR B, E, EE, EN (WITH)
ENA-178
RF101
EAF2207-001
FM RF
FM IF AMP
ANT
GND
TV
B
IFOUT
OSCOUT
AT101
FM75
GND
AM
BK001
Q101
2SC461(B.C)
Q102
2SC535(B.C)
Q103
2SC461(B.C)
R103
220
R102
3.3K
R104
2.7K
R105 390
R106
1K
R107
560
R108
3.3K
R109
220
C101
0.01
C102
100/25
C104
0.022
C105
0.022
C107
22/25
CF101
QAX0285-001Z
C129
0.001
C128
0.47/50
R127
8.2K
C123
0.047QCC
R124
2.2K
IC121
LC72131
PLL
Xout
VSS
LPFout
LPFin
PD
VDD
FMOSC
AMOSC
IF REQ
FM/AM IF
XIn
CE
TUDATA
CK
IFDATA
FM
AM
LW
AUTO/MONO
FM-LOW
R121
47K
X121
7.2M
C121
18P
C122
18P
Q111
2SD2144(VW)
Q112
2SD2144(VW)
Q113
2SD2144(VW)
Q114
2SD2144(VW)
R111
4.7K
R112
4.7K
R113
10K
R114
1.2K
C113
0.022
R110
4.7K
T11
QQR0591-001
R119
10K
C111
0.022
C112
12P
R115
100K
MW&LW RF&OSC
R116
4.7K
R129 2.2K
C103
0.022
TP101
V.TUNE
C130
100/25
R128
4.7K
R130
68(1/4W)F.RES.
R126
5.6K
Q121
DTA124E
R131
10K
R184
10K
R134
1K
R183
10K
R182
10K
R133
8.2K
R122
4.7K
D121
1SS133
C117
5.6P
L111
15μ
C118
15P
C137
680P
C133
22/25
R140
18K
C136
1/50
C135
0.022
D129
1SS133
R132
1K
C126
100P
C156
0.022
R146
3.3K
C157
0.047QCC
C158
22/25
C168
0.27TF
R147
15K
R148
560
C.M.
TP102
IC102
LA1837
DUFFER
AM OSC
REG
AM RF
AFC
AM AGC
AM DET
FM OUT
IF IN
LO
RO
RIN
LIN
ROUT
LOUT
FM IN OSC
AM MIX
FM IF
AM IF
GND
TUNED
STEREO
VCC
FM DFT
AM SD
FM VSM
AM VSM
MUTE
FM/AM
MONO/ST
FM DET/
AM DET
C161
1/50
C162
1/50
R157
6.8K
R158
6.8K
C139
0.033TF
C140
0.033TF
C185 1/50
C186 1/50
C150
22/25
CF102
QAX0303-001
C141
0.047QCC
C144
0.047
R145
10K
T142
QAX0303-001
R142 47
C163
0.022
C164
0.047
R144
3.3K
C147
1/50
C148
0.47/50
C149
1/50
R143 5.6K
C146
1/50
C143
0.022
R141
4.7K
R150
100
T141
QQR0613-001
FL141
QQR0590-001
FL142
QQR0590-001
R163
4.7K
C181
0.0056TF
R161
1K
R164
4.7K
C182
0.0056TF
R162
1K
C184
100/25
D313
1SS133
R181
1K
D130
MTZ10JC
C183
0.022
C180
100/25
Q123
2SC2060(Q.R)
9.4V
CN111
IFDATA
CE
TUNERDATA
CK
MUTE
TUNED
STEREO
12V
5.6V
LOUT
GND
ROUT
FROM CN702
OF ENH-319-1
(SHEET 2/6)
RDS
IC191
LC7073
OSC
GND
CLO
DO
DST
ERR
COR
RDS
RES
CIN
DIN
VDD
X192
EFO-EC4004
IC192
SAA6579
CL
T57
XO
XI
QUAL
DA
VREF
MUX
OUT
C192
47P
C191
82P
R191
2.2K
X191
VCX5067-001
C196
22/25
C195
330P
C194
0.022
C193
560P
C199
22/25
C197
1.5MLC
CN112
D.GND
RDS RST
RDS CLK
RDS DATA
RDS D.ST
TO CN502
OF ENH-319-3
(SHEET 3/6)
RE101
QAU0005-001
ANT
GND
GND
GND
VT
B
IF OUT
OSC OUT
C1
27P
C2
15P
L1
L2
C3
27P
C4
0-5P
D1
R1
C5
4-10P
C20
0.022
C6
FET
2SK302
R2
100K
R3
100K
R4
0-100
L3
L4
C7
5-10P
D2
D3
R5
33K
R6
33K
C8
0-7P
C21
C9
6P
L5
L6
R7
470K-1.2M
C10
220P
C11
22P
C12
1P
TR1
2SC2714
C22
0.022
R18
330
R10 100
R8
0-100
R12
R14
330
R17
330
R16
120K-560K
C19
15P
R11
10K
C4
0-5P
C15
8P
D4
L7
C13
47P
TR2
2SC2413
C16
27P
R13
10K
R15
680-0.5K
C18
2-4P
C17
18P
TR3
2SC2413
D1-D4: BB404, SVC220 or KV1440
1
2
3
4
5
6
7
8
9

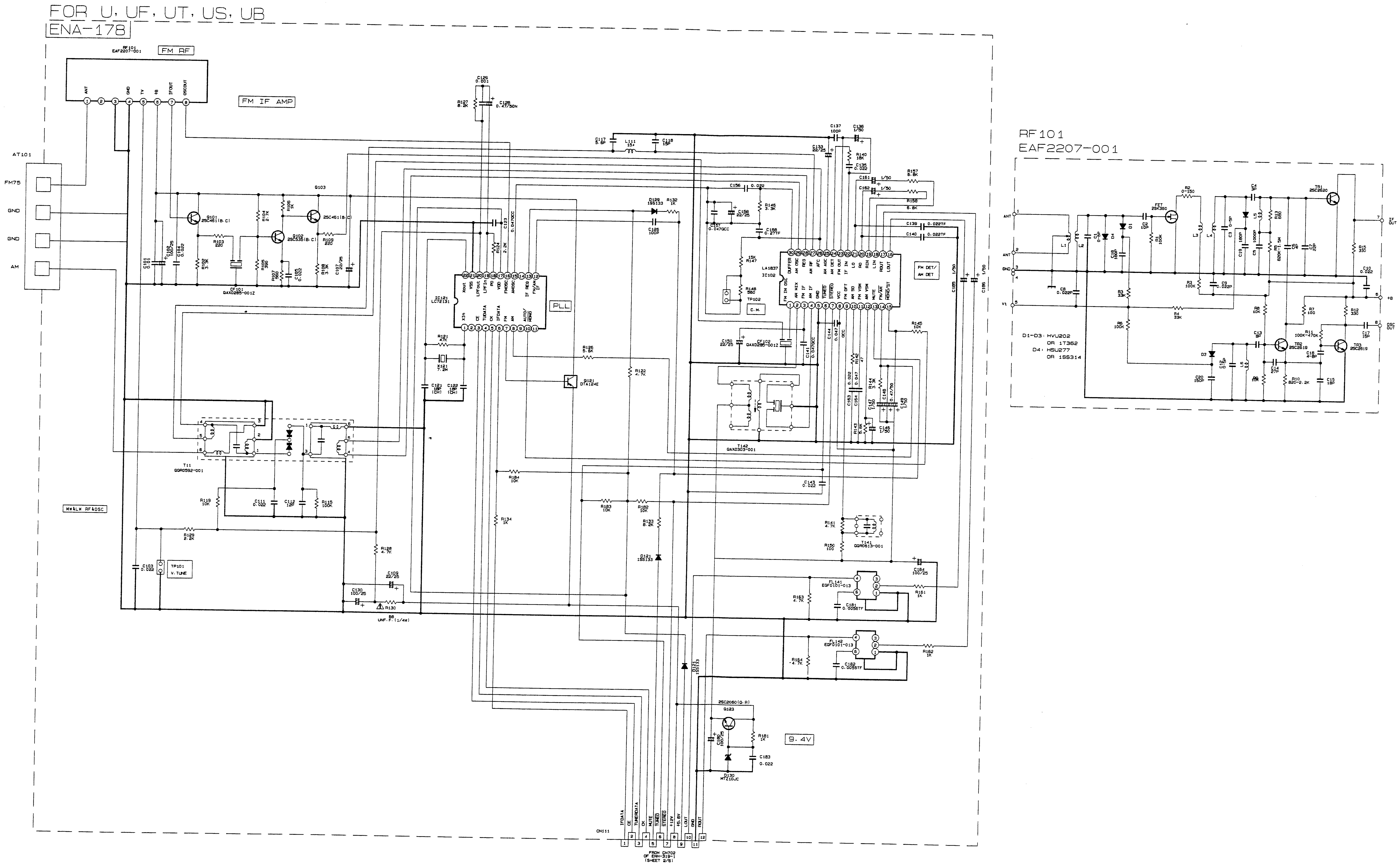
Tunner for J. C.


FOR J. C
ENA-178
RF101
EAF2207-001
FM RF
ANT
GND
TV
+B
IFOUT
OSCOUT
FM IF AMP
Q101
2SC4511(B・C)
Q102
2SC5351(B・C)
Q103
2SC461(B・C)
CF101
GAX0284-001Z
C129 0.001
R127 8.2K
C128 0.47/50N
C117 5.6P
L111 15μ
C118 15P
C137 220P
C136 1/50
C133 22/25
R140 18K
C135 0.022
C161 1/50
C162 1/50
R157 6.8K
R158 6.8K
C156 0.022
R146 3.3K
C158 22/25
C157 0.047GCC
C168 0.27TF
D129 1SS133
R132 1K
C126 100P
C123 0.047GCC
R124 2.2K
IC121
LC72131
PLL
Xout
VSS
LPFout
LPFin
PD
VDD
FMOSC
AMOSC
IF REQ
FM/AM IF
Xin
CE
TUDATA
CK
IFDATA
FM
AM
AUTO/MONO
IC102
LA1837
FM DET/
AM DET
R147 15K
R148 560
TP102
C.M.
C139 0.033TF
C140 0.033TF
C185 1/50
C186 1/50
R145 10K
C150 22/25
CF102
GAX0284-001Z
C141 0.047GCC
C144 0.047
R142 47
C163 0.022
C164 0.047
R144 3.3K
C148 0.47/50
C147 1/50
C149 1/50
R143 5.6K
C145 1/50
T142
GAX0303-001
R121 47K
X121 7.2M
C121 18P (CH)
C122 18P (CH)
R126 5.6K
Q121 DTA124E
R122 4.7K
T11
QQR0592-001
R119 10K
C111 0.022
C112 12P
R115 100K
MW&LW RF&OSC
R184 10K
R183 10K
R182 10K
R134 1K
R133 8.2K
D121 1SS133
C143 0.022
R141 4.7K
R150 100
T141
QQR0513-001
C184 100/25
R129 2K
R128 4.7K
C103 0.022
TP101
V.TUNE
C105 22/25
C130 100/25
R130
68
UNF.C.(1/4W)
FL141
QQR0590-001
R153 4.7K
C181 0.0056TF
R161 1K
FL142
QQR0590-001
R164 4.7K
C182 0.0056TF
R162 1K
D131 1SS133
Q123
2SC2060(Q.R)
C180 100/25
R181 1K
C183 0.022
D130
MTZ10JC
9.4V
IFDATA
CE
TUNERDATA
CK
MUTE
TUNED
STEREO
+12V
+5.6V
LOUT
GND
ROUT
CN111
FROM CN702
OF ENA-319-1
(SHEET 2/8)


RF101
EAF2207-001
ANT
GND
Vt
FET
2SK360
TR1
2SC2620
TR2
2SC2619
TR3
2SC2619
R2 0-150
C4 5P
C2 10P
R1 100K
C18 180P
R3 33K
R4 33K
R5 100K
R6 100K
C8 0.022P
C9 0.022P
R13 680
R14 330
C10 0.022
R7 100
R8 10K
R9 10K
R11 100K-470K
R12 330
C13 8P
C17 15P
C16 4-8P
C12 0-5P
C14 27P
R10 820-2.2K
C15 18P
C20 150P
IF OUT
+B
OSC OUT
D1-D3: HVU202
OR 1T362
D4: HSU277
OR 1SS314

1 2 3 4 5 6 7 8 9 10

EX70] Tunner for U, UF, UT, US, UB


FOR U, UF, UT, US, UB
ENA-178
RF101
EAF2207-001
FM RF
ANT
GND
TV
VB
IFOUT
OSCOUT
FM IF AMP
AT101
FM75
GND
GND
AM
Q101 2SC461(B,C)
Q102 2SC535(B,C)
Q103 2SC461(B,C)
CF101 QAX0285-001Z
IC121 LC72131
PLL
X121 7.2M
Q121 DTA124E
LA1837 IC102
FM DET/ AM DET
T11 QQR0592-001
T142 QAX0303-001
T141 QQR0513-001
MW&LW RF&OSC
TP101 V.TUNE
TP102
FL141 EGF0101-013
FL142 EGF0101-013
R130 68 UNF.F (1/4W)
2SC2060(Q,R) Q123
D130 MTZ10JC
9.4V
CN111
IFDATA
CE
TUNERDATA
CK
MUTE
STEREO
TUNED
+15V
+5.6V
LOUT
GND
ROUT
FROM CN702 OF ENH-319-1 (SHEET 2/8)
RF101
EAF2207-001
ANT
ANT
GND
Vt
IF OUT
+B
OSC OUT
FET 2SK360
TR1 2SC2620
TR2 2SC2619
TR3 2SC2619
D1-D3: HVU202
OR 1T362
D4: HSU277
OR 1SS314

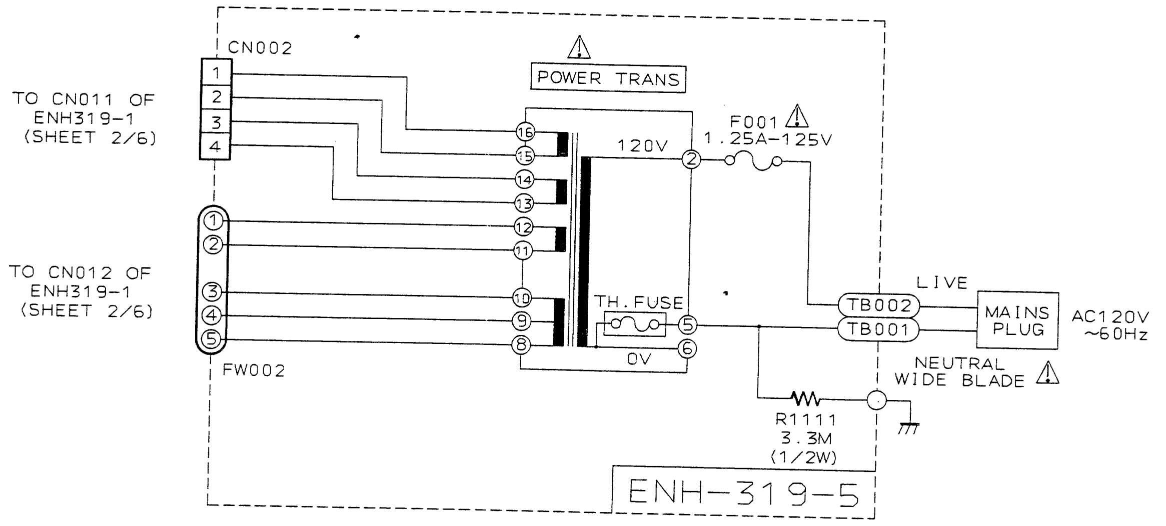
[RX-EX70] Power Supply

EXPLANATION OF OVERALL OF SCHEMA
MODEL RX-EX90/RX-EX90R/RX-EX70/RX-EX70R

SHEET No.	MODEL No.	CIRCUITS DESCRIPTION
1/6	RX-EX90/RX-EX90R/RX-EX70/RX-EX70R	PRIMARY WITH TRANSFORMER
2/6	RX-EX90/RX-EX90R/RX-EX70/RX-EX70R	DC REGULATORS/AUDIO OUTPUT/EXTERNAL SIGNAL INPUT
3/6	RX-EX90/RX-EX90R/RX-EX70/RX-EX70R	USER CONTROL KEYS/SYSTEM CONTROL LSI/FL DISPLAY
4/6	RX-EX90/RX-EX70	TUNER RF/IF/FM MULTIPLEX(ONLY J/C)
5/6	RX-EX90R/RX-EX70R	TUNER RF/IF/FM MULTIPLEX(ONLY B/E/EN/EE)
6/6	RX-EX90/RX-EX70	TUNER RF/IF/FM MULTIPLEX(ONLY U/US/UB/UF/UT)

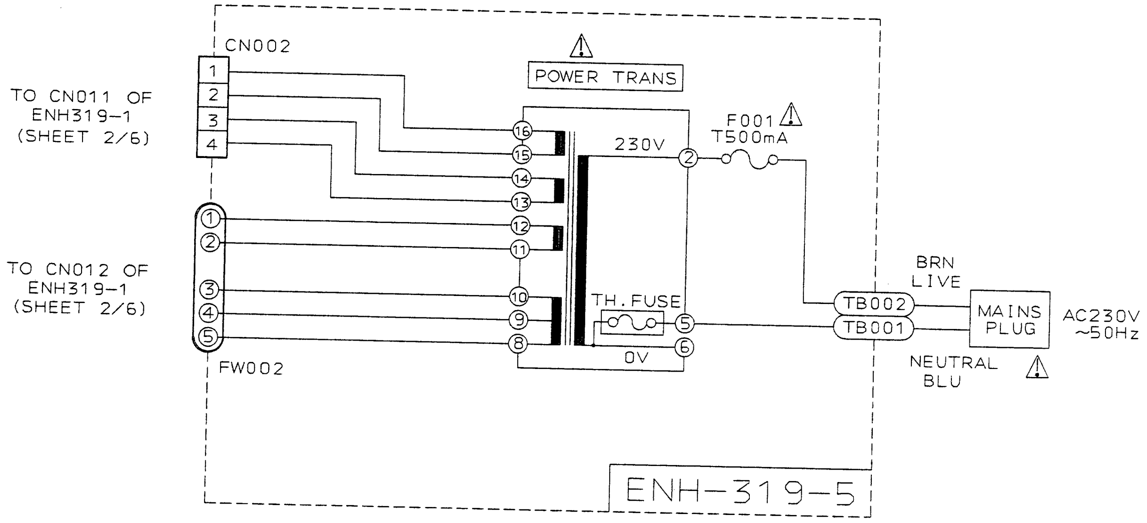
POWER SUPLLY SECTION

J, C



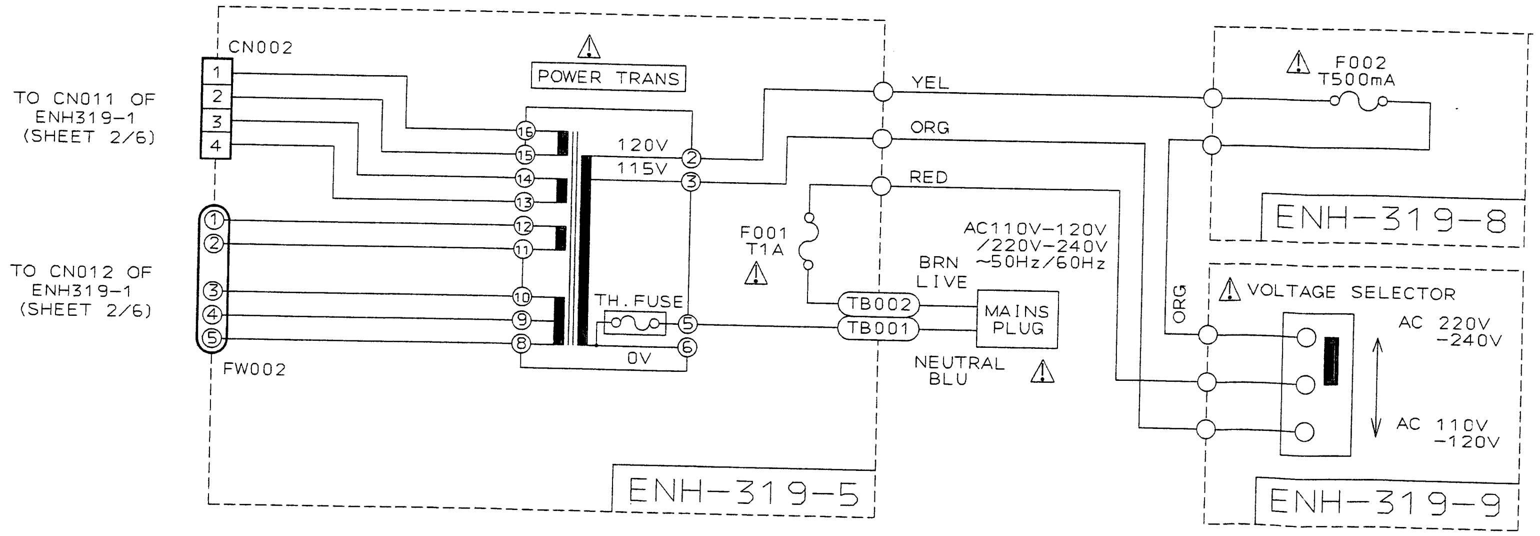
TO CN011 OF ENH319-1 (SHEET 2/6)
TO CN012 OF ENH319-1 (SHEET 2/6)
CN002
1
2
3
4
①
②
③
④
⑤
FW002
⚠
POWER TRANS
⑯
⑮
⑭
⑬
⑫
⑪
⑩
⑨
⑧
120V
②
TH.FUSE
⑤
⑥
0V
F001 ⚠
1.25A-125V
LIVE
TB002
TB001
MAINS PLUG
AC120V ~60Hz
NEUTRAL
WIDE BLADE ⚠
R1111
3.3M
(1/2W)
ENH-319-5

B/E/EE/EN



TO CN011 OF ENH319-1 (SHEET 2/6)
TO CN012 OF ENH319-1 (SHEET 2/6)
CN002
1
2
3
4
①
②
③
④
⑤
FW002
⚠
POWER TRANS
⑯
⑮
⑭
⑬
⑫
⑪
⑩
⑨
⑧
230V
②
TH.FUSE
⑤
⑥
0V
F001 ⚠
T500mA
BRN
LIVE
TB002
TB001
MAINS PLUG
AC230V ~50Hz
NEUTRAL
BLU
⚠
ENH-319-5

U, UB, UF, US, UT



TO CN011 OF ENH319-1 (SHEET 2/6)
TO CN012 OF ENH319-1 (SHEET 2/6)
CN002
1
2
3
4
①
②
③
④
⑤
FW002
⚠
POWER TRANS
⑯
⑮
⑭
⑬
⑫
⑪
⑩
⑨
⑧
120V
115V
②
③
TH.FUSE
⑤
⑥
0V
F001
T1A
⚠
YEL
ORG
RED
AC110V-120V
/220V-240V
~50Hz/60Hz
BRN
LIVE
TB002
TB001
MAINS PLUG
NEUTRAL
BLU
⚠
ENH-319-5
⚠ F002
T500mA
ENH-319-8
ORG
⚠ VOLTAGE SELECTOR
AC 220V
-240V
AC 110V
-120V
ENH-319-9

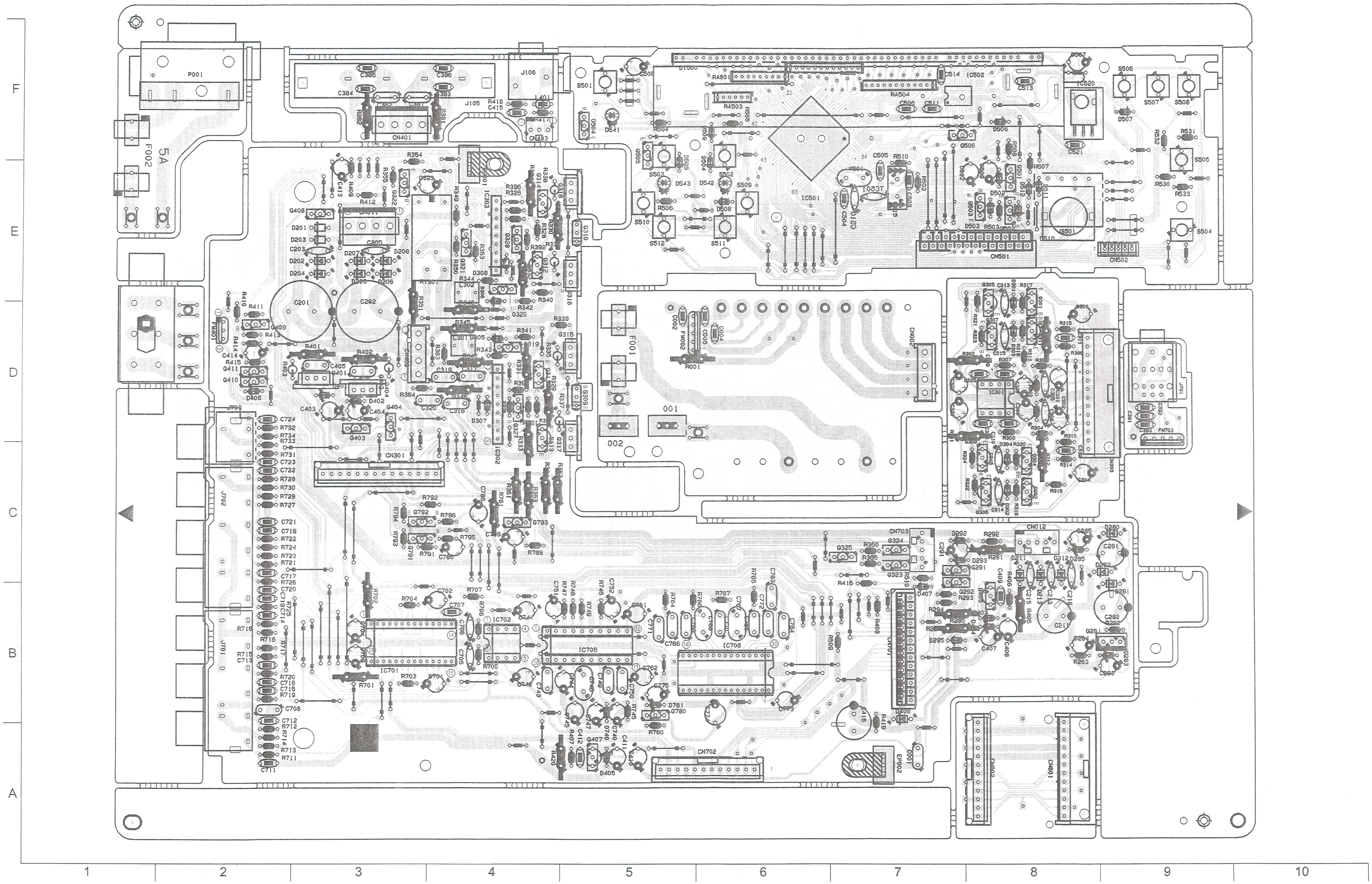
VERSION CODES

J : U.S.A.
C : CANADA
EN : NORDIC COUNTRIES
E : CONTINENTAL EUROPE
EE : EASTERN EUROPE
B : U.K.
UB : HONKONG
US : SINGAPORE
UT : TAIWAN
UF : CHINA
U : UNIVERSAL EXCEPT ALL OF ABOVES

NOTE :
MARK (*) IS TO SHOW DEVIATION IN VERSION DETAILS ARE EXPLAINED NEAR MARK.

Location of P. C. Board Parts

■ Amp. Tuner Display control P.C. board


F
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D
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1
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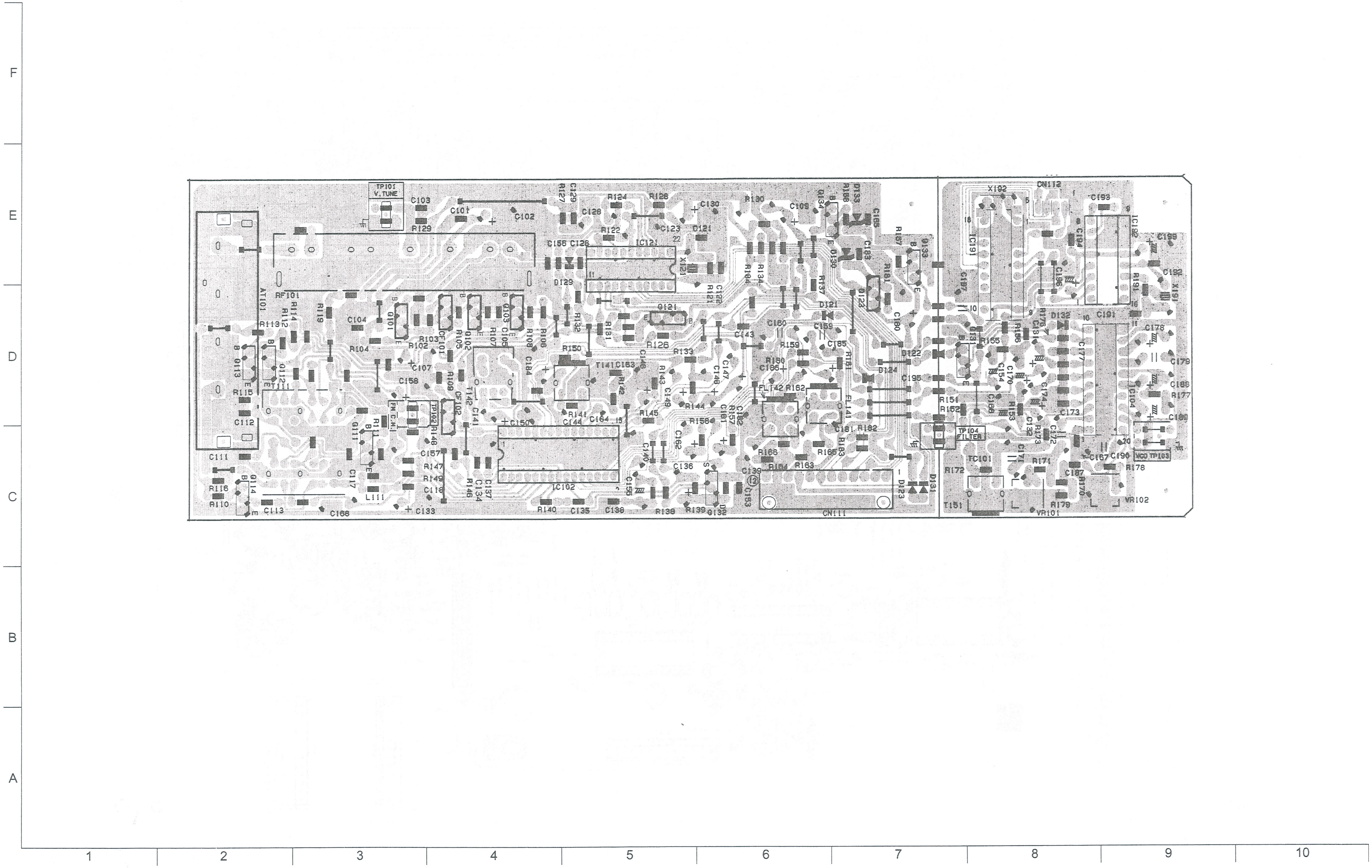
5
6
7
8
9
10
P001
F002
5A
J105
J106
CN401
CN403
C385
C386
C384
C383
R382
R381
R418
C415
L401
R417
S501
C508
D1000
RA501
RA502
C514
IC502
C513
IC520
S506
S507
S508
RA503
RA504
R505
D541
Q505
S503
D543
D542
S502
S509
IC501
S510
S506
S512
S511
CN501
CN502
S501
S505
S504
R531
R532
R530
R533
D507
C521
R510
C505
R507
D508
Q506
Q507
R354
R353
R409
R412
R355
Q322
R349
Q301
Q408
D201
D203
C203
D202
D204
D207
D208
C205
C206
D205
D206
CN201
C201
C202
R410
R411
Q409
R401
R402
R403
Q401
C405
Q411
Q410
R414
R415
C414
D408
C403
D402
C404
Q404
Q403
FW401
J703
J702
J701
C724
R732
R734
R733
R731
C723
C722
R728
R730
R729
R727
C721
C718
R722
R724
R723
R721
C717
R726
C720
R725
C719
C714
R716
R715
C713
R717
R720
C716
C715
R719
C708
C712
R712
R714
R713
R711
C711
CN301
IC303
IC302
R330
R328
R326
R396
R338
Q314
Q318
Q319
Q316
Q315
Q309
Q313
Q317
Q320
R340
R342
R339
R341
R345
R343
R344
L301
L302
D305
D306
D307
D308
C319
C320
C318
R384
R351
R383
R329
R337
R333
R331
R361
R363
R362
Q792
R792
R794
R796
R793
Q791
R791
R795
C786
C789
R789
Q793
R781
C788
F001
FW002
C002
C003
C004
R001
CN002
001
002
IC301
IC305
Q305
C313
R317
Q301
Q302
R318
R321
R323
Q307
C315
R302
R307
Q303
R306
R304
R303
R308
R324
R322
R309
R310
R312
R314
R316
Q306
C314
R315
C303
CN303
J701
C391
C392
C393
FM703
CN703
Q324
Q323
Q325
R366
R365
R416
D292
R292
C291
Q291
D293
R281
D211
D212
D285
Q285
D280
C281
D282
CN012
C409
R406
C215
C216
C213
R405
D213
Q292
R293
R294
R286
D295
C211
C282
C292
Q281
D281
Q283
R283
C283
D283
C407
C408
D407
CN701
R408
R509
R701
R702
R703
R704
R705
R706
R707
C701
C702
C705
C706
C707
IC701
IC702
IC706
IC708
C741
C742
C743
C744
C745
C746
C747
C748
C749
C750
C751
C752
R746
R747
R748
R749
C761
C762
C763
C764
C765
C766
C767
C768
C771
C772
C775
R764
R765
R766
R767
D781
Q780
R760
R745
D740
C412
R407
Q407
D405
C411
R420
CN702
EP002
C001
D406
R419
Q416
CN802
CN801

Tuner P. C. board


F
E
D
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10
TP101 V.TUNE
IC102
IC121
CN111
CN112
IC191
IC192
IC104
T151
TP104 FILTER
VCO TP103
VR101
VR102
X191
X192
RF101
AT101
CF101
FL141
FL142
T141
T142
FM C.N.

PARTS LIST

[RX-EX70/EX70R]

1. Those parts can not to sent as a rule that has not printed or be displayed 「—」 on the parts list.
2. The printed circuit board will be not sent as a rule.
3. ⚠ Parts are safety assurance parts. When replacing those parts, make sure to use to specified one.
4. All printed circuit boards and its assemblies are not available as service parts.

Area Suffix

RX-EX70

C ------------ Canada
J ------------ U.S.A.
U ----------- Other Areas
UB ----------- Hong Kong
UF ---------- China
US ---------- Singapore
UT ----------- Taiwan

RX-EX70R

B ------------ U.K
E ---------- Continental Europe
EN ------ Northan Europe
EE ------- Eastern Europe

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Electrical Parts List-- 3- 5
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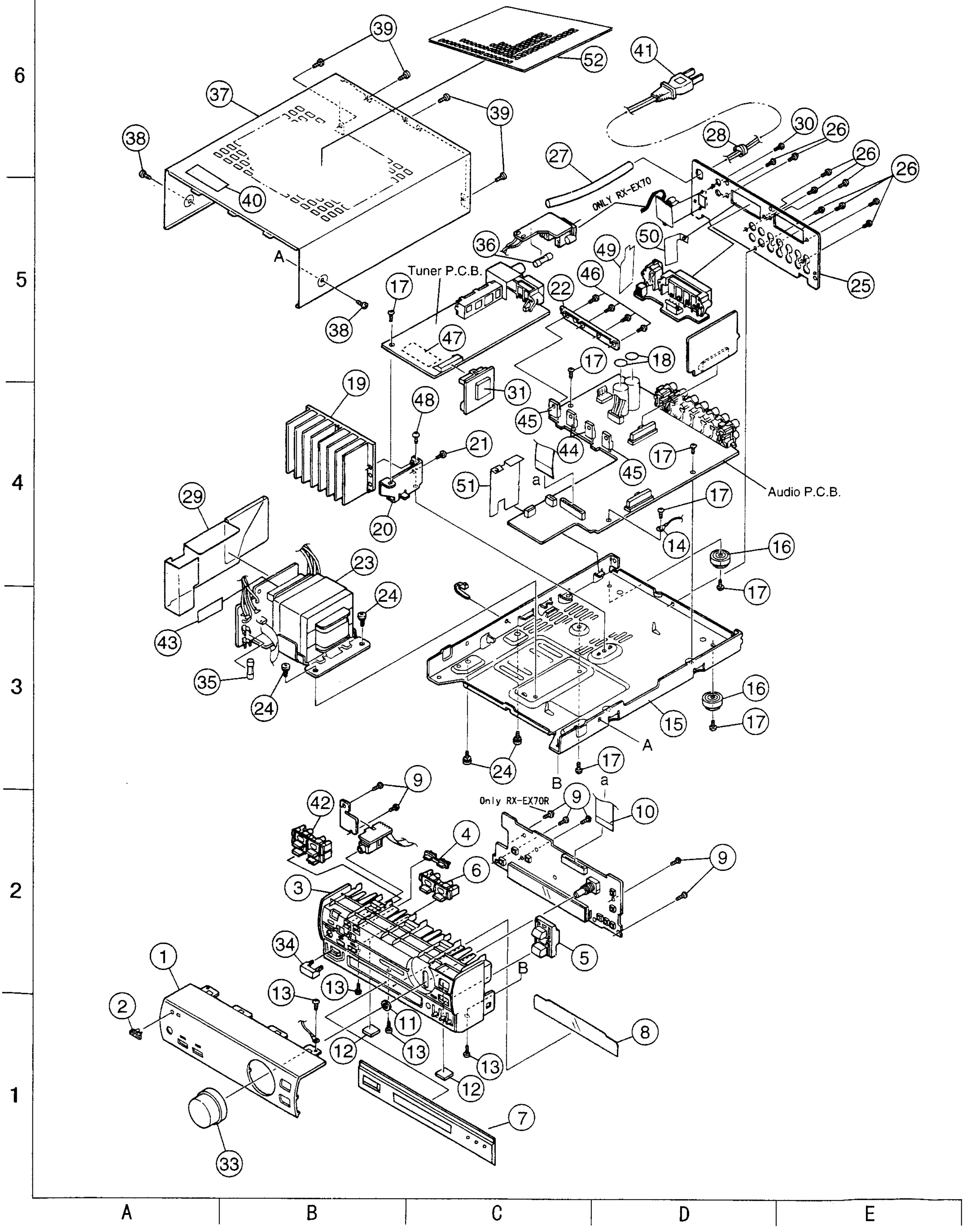
Tuner P.C.B.(RX-EX70 C/J) -- 3- 9
Tuner P.C.B.(RX-EX70 U/UB/UF/US/UT)--- 3- 10
Tuner P.C.B.(RX-EX70R B/E/EE/EN)--- 3- 11
Accessories List-- 3- 12

General Exploded View and Parts List

Block No. M1MM


6
5
4
3
2
1
A
B
C
D
E
Tuner P.C.B.
Audio P.C.B.
ONLY RX-EX70
Only RX-EX70R
A
B
a
1
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3
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52

■Parts List

Block No. M1MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	LE20328-002A	FRONT PANEL	1		C J U UB UF US UT
		LE20328-003A	FRONT PANEL	1		B E EE EN
	2	E406971-001SM	JVC MARK	1		
	3	LE10157-002A	FRONT BASE	1		
	4	LE30549-001A	INDICATOR	1		
	5	LE20330-002A	PUSH BUTTON	1		
	6	LE30569-003A	PUSH BUTTON	1		
	7	LE30545-003A	WINDOW SCREEN	1		
	8	LE30550-002A	FL SCREEN	1		
	9	QYSDSF2608Z	SCREW	6		J C U UB UF US UT
		QYSDSF2608Z	SCREW	7		B E EE EN
	10	VWF1225-18008W	FLAT WIRE	1		
	11	E71862-003	VOLUME NUT	1		
	12	E75896-001	SPACER	2		
	13	QYSDSG3006E	T.SCREW	4		
	14	EWT025-003	TERMINAL WIRE	1		
	15	LE10158-001A	CHASSIS BASE	1		
	16	E47227-029	FOOT	2		
	17	QYSBSG3008E	T.SCREW	7		
	18	E75303-003	SHIELD TAPE	2		C U UB UF US UT B E EE EN
	19	LV30509-003A	HEAT SINK	1		
	20	LE30553-001A	HEAT SINK BRACKET	1		
	21	QYSBSG3008E	T.SCREW	1		
	22	LE40351-001A	LEAF SPRING	1		
	23	QQT0178-002	POWER TRANSFORMER	1	T 001	C J
		QQT0178-003	POWER TRANSFORMER	1	T 001	B E EE EN
		QQT0178-004	POWER TRANSFORMER	1	T 001	U UB UF US UT
	24	QYSDSTL4008E	SPECIAL SCREW	4		
	25	LE20332-021A	REAR PANEL	1		J
		LE20332-022A	REAR PANEL	1		C
		LE20332-023A	REAR PANEL	1		U UB UF US
		LE20332-024A	REAR PANEL	1		UT
		LE20332-025A	REAR PANEL	1		B E EN
		LE20332-026A	REAR PANEL	1		EE
	26	QYSBSGY3008E	SPECIAL SCREW	9		
	27	QXTG709-220	PROTECTOR TUBE	1		
	28	QHS3876-162	CORD STOPPER	1		
	29	LV30477-001A	SHIELD COVER	1		
	30	QYSBSG2608M	SCREW	2		U UB UF US UT
	31	LV30064-001A	SPACER	1		
	33	LE30554-001A	VOLUME KNOB ASS'Y	1		
	34	LE30547-001A	POWER CAP	1		C J
		LE30547-002A	POWER CAP	1		U UB UF US UT B E EE EN
	35	QMF51E2-1R0-J1	FUSE	1	F001	U UB UF US UT
		QMF51U1-1R25-J1	FUSE	1	F001	C J
		QMF51E2-R50-J1	FUSE	1	F001	B E EE EN
	36	QMF51E2-R50-J1	FUSE	1	F002	U UB UF US UT
	37	LE20334-005A(S)	METAL COVER	1		C J US B E EE EN
		LE20334-006A(S)	METAL COVER	1		U UB UF UT

■Parts List

Block No. M1MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	38	QYSDSG3006N	T.SCREW	2		
	39	QYSBSGG3008E	T.SCREW	4		
	40	E67000-027	CAUTION LABEL	1		
	41	QMPN100-200-JD	POWER CORD	1		UB
		QMPR100-200-JC	POWER CORD	1		UF
⚠		QMP1D00-200H	POWER CORD	1		C J
⚠		QMP3900-200	POWER CORD	1		U US E EE EN
		QMP5530-0085BS	POWER CORD	1		B
⚠		QMP7520-200	POWER CORD	1		UT
	42	LV20089-001A	PUSH BUTTON	1		B E EE EN
	43	L75804-001	CAUTION LABEL	1		C
		L75803-001	CAUTION LABEL	1		J
	44	2SC4511/PY/	SI.TRANSISTOR	4	Q315 Q316	
	45	2SA1725/PY/	SI.TRANSISTOR	4	Q317 Q318	
	46	E73525-003	SCREW	4		
	47	LV30064-016A	SPACER	1		B E EE EN
	48	QYSBST3006E	TAP.SCREW	1		
	49	LV40472-001A	SHIELD COVER	1		U UB UF US UT
	50	LV40488-001A	SHIELD COVER	1		U UB UF US UT
	51	LV40471-001A	SHIELD COVER	1		U UB UF US UT
	52	LV30362-001A	PROTECT SHEET	1		U UB UF UT

■Electrical Parts List(Main P.C.B RX-EX70/70R)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC301	NJM5532D	I.C(MONO-ANALOG)	
	IC501	MN173222JABG	I.C(M)	
	IC502	M35501FP	I.C(M)	
	IC520	GP1U271X	INFRARED DETECT UNIT	
	IC701	TC9164AN	I.C(DIGI-MOS)	
	IC702	NJM5532D	I.C(MONO-ANALOG)	
	IC706	LA2650	I.C(MONO-ANALOG)	
	IC708	TDA7439	I.C(M)	
		DIODES		
	D201	11E2-T5	SILICON	
	D202	11E2-T5	SILICON	
	D203	11E2-T5	SILICON	
	D204	11E2-T5	SILICON	
	D205	11E2-T5	SILICON	
	D206	11E2-T5	SILICON	
	D207	11E2-T5	SILICON	
	D208	11E2-T5	SILICON	
	D211	11E2-T5	SILICON	
	D280	11E2-T5	SILICON	
	D281	11E2-T5	SILICON	
	D282	11E2-T5	SILICON	
	D283	MTZJ30C-T2	ZENER	
	D285	MTZJ5.6C-T2	ZENER	
	D292	1SS133-T2	SI.DIODE	
	D293	MTZJ5.1C-T2	ZENER	
	D295	1SS133-T2	SI.DIODE	
	D301	1SS133-T2	SI.DIODE	
	D302	1SS133-T2	SI.DIODE	
	D303	1SS133-T2	SI.DIODE	
	D304	1SS133-T2	SI.DIODE	
	D305	1SS133-T2	SI.DIODE	
	D306	1SS133-T2	SI.DIODE	
	D307	SLR-342MC-T	L.E.D.	EXCEPT J
	D308	SLR-342MC-T09	L.E.D.	EXCEPT J
	D323	MTZJ24C-T2	ZENER	U UB UF US UT
	D401	MTZJ18C-T2	ZENER	
	D402	MTZJ18C-T2	ZENER	
	D404	MTZJ5.6C-T2	ZENER	
	D405	MTZJ13A-T2	ZENER	
	D406	1SS133-T2	SI.DIODE	
	D407	1SS133-T2	SI.DIODE	
	D408	MTZJ6.2C-T2	ZENER	
	D502	1SS133-T2	SI.DIODE	
	D503	1SS133-T2	SI.DIODE	
	D504	1SS133-T2	SI.DIODE	EXCEPT J
	D505	1SS133-T2	SI.DIODE	U UB UF US UT
	D506	1SS133-T2	SI.DIODE	
	D507	1SS133-T2	SI.DIODE	
	D508	1SS133-T2	SI.DIODE	B E EE EN
	D509	1SS133-T2	SI.DIODE	
	D510	1SS133-T2	SI.DIODE	
	D511	1SS133-T2	SI.DIODE	
	D512	1SS133-T2	SI.DIODE	
	D541	SLR-342VC-T	L.E.D.	
	D542	SLR-342MC-T	L.E.D.	
	D543	SLR-342MC-T	L.E.D.	
	D740	RD9.1JS/B3/-T2	ZENER	
	D761	RD9.1JS/B3/-T2	ZENER	
		TRANSISTORS		
	Q281	2SB1357/EF/-T	SILICON	
	Q291	DTC144ES	DIGITAL TRANSISTOR	
	Q292	DTC114YS	DIGITAL TRANSISTOR	
	Q301	2SC1775AV/EF/-T	SILICON	
	Q302	2SC1775AV/EF/-T	SILICON	
	Q303	2SA872AV/E/-T	SILICON	
	Q304	2SA872AV/E/-T	SILICON	
	Q305	2SA872AV/E/-T	SILICON	
	Q306	2SA872AV/E/-T	SILICON	
	Q307	2SC1775AV/EF/-T	SILICON	
	Q308	2SC1775AV/EF/-T	SILICON	
	Q309	2SD637/QR/	SILICON	
	Q310	2SD637/QR/	SILICON	
	Q311	2SC2235/OY/-T	SILICON	
	Q312	2SC2235/OY/-T	SILICON	
	Q313	2SA965/OY/-T	SILICON	
	Q314	2SA965/OY/-T	SILICON	
	Q315	2SC4511/PY/	SI.TRANSISTOR	
	Q316	2SC4511/PY/	SI.TRANSISTOR	
	Q317	2SA1725/PY/	SI.TRANSISTOR	
	Q318	2SA1725/PY/	SI.TRANSISTOR	
	Q319	2SC2240/GL/-T	SILICON	
	Q320	2SC2240/GL/-T	SILICON	
	Q321	2SA970/GL/-T	SILICON	
	Q322	2SC1740S/RS/-T	SI.TRANSISTOR	C J
		2SD400MP/EF/-T	SILICON	EXCEPT C J
	Q323	2SD2144S/VW/-T	SILICON	
	Q324	2SD2144S/VW/-T	SILICON	
	Q325	DTA144ES	DIGITAL TRANSISTOR	
	Q327	2SA933S/RS/-T	SILICON	
	Q328	2SA933S/RS/-T	SILICON	
	Q401	2SD1944/JK/	SI.TRANSISTOR	
	Q402	2SB1565/EF/	SILICON	
	Q405	2SD2394/EF/	SILICON	
	Q407	2SD400MP/EF/-T	SILICON	
	Q408	2SC1740S/RS/-T	SI.TRANSISTOR	
	Q409	2SC1740S/RS/-T	SI.TRANSISTOR	
	Q410	2SC1740S/RS/-T	SI.TRANSISTOR	
	Q411	2SA933AS/RS/-T	SILICON	
	Q501	DTC114YS	DIGITAL .TRANSISTOR	
	Q502	DTC114ES	DIGITAL TRANSISTOR	
	Q503	DTA114ES	DIGITAL TRANSISTOR	
	Q504	DTC114YS	DIGITAL TRANSISTOR	
	Q505	DTC114YS	DIGITAL TRANSISTOR	
	Q506	DTC144WS-T	SILICON	
	Q780	2SC1775AV/EF/-T	SILICON	
	Q791	2SD2144S/VW/-T	SILICON	
	Q792	2SD2144S/VW/-T	SILICON	
	Q793	DTA144ES	DIGITAL TRANSISTOR	
		CAPACITORS		
	C001	QCF31HZ-223Z	0.022MF 50V CERAMIC	
	C201	QTE1V27-338	AL E.CAP.	
	C202	QTE1V27-338	AL E.CAP.	
	C203	QCF31HZ-103Z	0.01MF 50V CERAMIC	
	C205	QCF31HZ-103Z	0.01MF 50V CERAMIC	
	C211	QETB1EM-108	1000MF 25V AL E.CAP.	
	C281	QETC1EM-227ZN	220MF 25V AL E.CAP.	
	C282	QETB1HM-227	220MF 50V E.CAP.	
	C283	QETB1HM-226E	22MF 50V E.CAP.	
	C284	QETB1HM-226E	22MF 50V E.CAP.	
	C285	QETB1HM-475E	4.7MF 50V E.CAP.	
	C291	QETB1HM-225	2.2MF 50V AL E.CAP.	
	C301	QTE1E28-106Z	E.CAPA. I.M	
	C302	QTE1E28-106Z	E.CAPA. I.M	
	C303	QTE1E28-476Z	E.CAPA. I.M	
	C304	QTE1E28-476Z	E.CAPA. I.M	
	C305	QCS21HJ-221	220PF 50V CER.CAP.	
	C306	QCS21HJ-221	220PF 50V CER.CAP.	
	C307	QTE1E28-226Z	AL E.CAP.	
	C308	QTE1E28-226Z	AL E.CAP.	
	C309	QCSB1HJ-150Y	15PF 50V CER.CAP.	
	C310	QCSB1HJ-150Y	15PF 50V CER.CAP.	
	C311	QCSB1HJ-270Y	27PF 50V CER.CAP.	
	C312	QCSB1HJ-270Y	27PF 50V CER.CAP.	
	C313	QCS21HJ-470	47PF 50V CER.CAP.	
	C314	QCS21HJ-470	47PF 50V CER.CAP.	
	C315	QCS21HJ-470	47PF 50V CER.CAP.	
	C316	QCS21HJ-470	47PF 50V CER.CAP.	
	C317	QFN31HJ-104Z	0.1MF 50V MYLAR CAP.	
	C318	QFN31HJ-104Z	0.1MF 50V MYLAR CAP.	
	C321	QFZ0202-103Z	0.01MF M.MYLAR	
	C322	QFZ0202-103Z	0.01MF M.MYLAR	
	C323	QETB1HM-105	1MF 50V AL E.CAP.	B E EE EN
	C325	QCBB1HK-101Y	100PF 50V CER.CAP.	B E EE EN
	C326	QCBB1HK-101Y	100PF 50V CER.CAP.	B E EE EN
	C381	QFN31HJ-223ZN	0.022MF 50V MYLAR CAP.	B E EE EN
	C382	QFN31HJ-223ZN	0.022MF 50V MYLAR CAP.	B E EE EN

■Electrical Parts List(Main P.C.B RX-EX70/70R)

⚠	Item	Parts Number	Description	Area
	C383	QDXB1CM-222Y	2200PF 16V C CAP.	B E EE EN
	C384	QDXB1CM-222Y	2200PF 16V C CAP.	B E EE EN
	C385	QCGB1HK-102	1000PF 50V CER. CAP.	B E EE EN
	C386	QCGB1HK-102	1000PF 50V CER. CAP.	B E EE EN
	C391	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C392	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C393	QDVB1EZ-223Y	0.022MF 25V C CAP.	B E EE EN
	C403	QTE1E28-226Z	AL E. CAP.	
	C404	QTE1E28-226Z	AL E. CAP.	
	C405	QFN31HJ-103Z	0.01MF 50V MYLAR CAP.	
	C406	QFN31HJ-103Z	0.01MF 50V MYLAR CAP.	
	C407	QETB0JM-228	2200MF 6.3V AL E. CAP.	B E EE EN
		QETB0JM-477	470MF 6.3V AL E. CAP.	C J U UB UF US UT
	C408	QETC1CM-106Z	10MF 16V AL E. CAP.	
	C409	QDYB1CM-103Y	0.01MF 16V C CAP.	
	C410	QETC1CM-106Z	10MF 16V AL E. CAP.	
	C411	QETC1CM-106Z	10MF 16V AL E. CAP.	
	C412	QDYB1CM-103Y	0.01MF 16V C CAP.	
	C413	QEKC1HM-225Z	2.2MF 50V ELECTRO	
	C414	QETB1EM-476	47MF 25V AL E. CAP.	
	C415	QCBB1HK-331Y	330PF 50V CER. CAP.	
	C502	QETB0JM-476	47MF 6.3V AL E. CAP.	
	C503	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C504	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C505	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C506	QDYB1CM-103Y	0.01MF 16V C CAP.	
	C507	QER61HM-105Z	1MF 50V AL E. CAP.	
	C508	QER61HM-105Z	1MF 50V AL E. CAP.	
	C509	QETB1HM-225	2.2MF 50V AL E. CAP.	
	C510	QDC31HJ-220Z	22PF 50V C. CAPA. I.M	
	C511	QCSB1HJ-470	47PF 50V CER. CAP.	
	C512	QDC31HJ-270Z	27PF 50V ACCAPA. I.M	
	C513	QCBB1HK-471Y	470PF 50V CER. CAP.	
	C514	QCBB1HK-471Y	470PF 50V CER. CAP.	
	C515	QEZ0329-10AZ	ELECTRO	
	C521	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C701	QTE1E28-106Z	E. CAPA. I.M	
	C702	QTE1E28-106Z	E. CAPA. I.M	
	C703	QTE1E28-226Z	AL E. CAP.	
	C704	QTE1E28-226Z	AL E. CAP.	
	C705	QCS21HJ-101A	100PF 50V CER. CAP.	
	C706	QCS21HJ-101A	100PF 50V CER. CAP.	
	C707	QCBB1HK-471Y	470PF 50V CER. CAP.	
	C711	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C712	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C713	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C714	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C715	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C716	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C717	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C718	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C719	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C720	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C721	QCBB1HK-471Y	470PF 50V CER. CAP.	B E EE EN
	C722	QCBB1HK-471Y	470PF 50V CER. CAP	B E EE EN
	C723	QCBB1HK-471Y	470PF 50V CER. CAP	B E EE EN
	C740	QTE1C28-476Z	E. CAPA. I.M	
	C741	QTE1H28-105Z	E CAP.	
	C742	QTE1H28-105Z	E CAP.	
	C743	QFN31HJ-473ZN	0.047MF 50V MYLAR CAP.	
	C744	QTE1H28-475Z	E CAP.	
	C745	QTE1H28-474Z	E. CAPA. I.M	
	C746	QFN31HJ-473ZN	0.047MF 50V MYLAR CAP.	
	C747	QTE1H28-474Z	E. CAPA. I.M	
	C749	QFN31HJ-473ZN	0.047MF 50V MYLAR CAP.	
	C750	QFN31HJ-473ZN	0.047MF 50V MYLAR CAP.	
	C751	QTE1H28-105Z	E CAP.	
	C752	QTE1C28-476Z	E. CAPA. I.M	
	C761	QTE1E28-106Z	E. CAPA. I.M	
	C762	QTE1E28-106Z	E. CAPA. I.M	
	C763	QFN81HJ-272	2700PF 50V METAL. MYLAR	
	C764	QFN81HJ-272	2700PF 50V METAL. MYLAR	
	C765	QFN31HJ-223ZN	0.022MF 50V MYLAR CAP.	
	C766	QFN31HJ-223ZN	0.022MF 50V MYLAR CAP.	
	C767	QFVC1HJ-224Z	0.22MF 50V T. FILM	
	C768	QFVC1HJ-224Z	0.22MF 50V T. FILM	
	C769	QFN31HJ-563Z	0.056MF 50V MYLAR CAP.	
	C770	QFN31HJ-563Z	0.056MF 50V MYLAR CAP.	
	C771	QFN81HJ-183	0.018MF 50V METAL. MYLAR	
	C772	QFN81HJ-183	0.018MF 50V METAL. MYLAR	
	C773	QTE1C28-226Z	E. CAPA. I.M	
	C774	QTE1C28-107Z	E. CAPA. I.M	
	C775	QTE1C28-226Z	E. CAPA. I.M	
	C785	QTE1E28-106Z	E. CAPA. I.M	
	C786	QTE1E28-106Z	E. CAPA. I.M	
	C789	QETB1HM-475E	4.7MF 50V E. CAP.	
		RESISTORS		
	R280	QRE141J-1R0Y	1 1/4W R. NETWORK	EXCEPT J
		QRJ146J-4R7X	4.7 1/4W R. NETWORK	J
	R281	QRJ146J-4R7X	4.7 1/4W R. NETWORK	J
		QRZ9006-4R7X	4.7 FUSIBLE	EXCEPT J
	R282	QRJ146J-181X	180 1/4W R. NETWORK	J
		QRZ9005-181X	180 FUSIBLE	EXCEPT J
	R283	QRE141J-223Y	22K 1/4W R. NETWORK	
	R292	QRE141J-103Y	10K 1/4W R. NETWORK	
	R293	QRE141J-103Y	10K 1/4W R. NETWORK	
	R294	QRE141J-102Y	1K 1/4W R. NETWORK	
	R303	QRE141J-623Y	62K 1/4W R. NETWORK	
	R304	QRE141J-623Y	62K 1/4W R. NETWORK	
	R305	QRE141J-331Y	330 1/4W R. NETWORK	
	R306	QRE141J-331Y	330 1/4W R. NETWORK	
	R307	QRA14CF-1001Y	1K 1/4W R. NETWORK	
	R308	QRA14CF-1001Y	1K 1/4W R. NETWORK	
	R309	QRE141J-104Y	100K 1/4W R. NETWORK	
	R310	QRE141J-104Y	100K 1/4W R. NETWORK	
	R311	QRJ146J-331X	330 1/4W R. NETWORK	J
		QRZ9005-331X	330 FUSIBLE	EXCEPT J
	R312	QRJ146J-331X	330 1/4W R. NETWORK	J
		QRZ9005-331X	330 FUSIBLE	EXCEPT J
	R313	QRE141J-472Y	4.7K 1/4W R. NETWORK	
	R314	QRE141J-472Y	4.7K 1/4W R. NETWORK	
	R315	QRE141J-472Y	4.7K 1/4W R. NETWORK	
	R316	QRE141J-472Y	4.7K 1/4W R. NETWORK	
	R317	QRE141J-151Y	150 1/4W R. NETWORK	
	R318	QRE141J-151Y	150 1/4W R. NETWORK	
	R319	QRE141J-151Y	150 1/4W R. NETWORK	
	R320	QRE141J-151Y	150 1/4W R. NETWORK	
	R321	QRE141J-820Y	82 1/4W R. NETWORK	
	R322	QRE141J-820Y	82 1/4W R. NETWORK	
	R323	QRE141J-820Y	82 1/4W R. NETWORK	
	R324	QRE141J-820Y	82 1/4W R. NETWORK	
	R325	QRE141J-333Y	33K 1/4W R. NETWORK	
	R326	QRE141J-333Y	33K 1/4W R. NETWORK	
	R327	QRE141J-621Y	620 1/4W R. NETWORK	
	R328	QRE141J-621Y	620 1/4W R. NETWORK	
	R329	QRJ146J-221X	220 1/4W R. NETWORK	
	R330	QRJ146J-221X	220 1/4W R. NETWORK	
	R331	QRJ146J-4R7X	4.7 1/4W R. NETWORK	J
		QRZ9006-4R7X	4.7 FUSIBLE	EXCEPT J
	R332	QRJ146J-4R7X	4.7 1/4W R. NETWORK	J
		QRZ9006-4R7X	4.7 FUSIBLE	EXCEPT J
	R333	QRJ146J-4R7X	4.7 1/4W R. NETWORK	J
		QRZ9006-4R7X	4.7 FUSIBLE	EXCEPT J
	R334	QRJ146J-4R7X	4.7 1/4W R. NETWORK	J
		QRZ9006-4R7X	4.7 FUSIBLE	EXCEPT J
	R335	QRT01DJ-R22X	0.22 1W R. NETWORK	
	R336	QRT01DJ-R22X	0.22 1W R. NETWORK	
	R337	QRT01DJ-R22X	0.22 1W R. NETWORK	
	R338	QRT01DJ-R22X	0.22 1W R. NETWORK	
	R339	QRE141J-822Y	8.2K 1/4W R. NETWORK	
	R340	QRE141J-822Y	8.2K 1/4W R. NETWORK	
	R341	QRE141J-223Y	22K 1/4W R. NETWORK	
	R342	QRE141J-223Y	22K 1/4W R. NETWORK	
	R343	QRE141J-223Y	22K 1/4W R. NETWORK	
	R344	QRE141J-223Y	22K 1/4W R. NETWORK	
	R345	QRJ146J-100X	10 1/4W R. NETWORK	
	R346	QRJ146J-100X	10 1/4W R. NETWORK	
	R347	QRJ146J-100X	10 1/4W R. NETWORK	

■Electrical Parts List(Main P.C.B RX-EX70/70R)

⚠	Item	Parts Number	Description	Area
	R348	QRJ146J-100X	10 1/4W R.NETWORK	
	R349	QRE141J-104Y	100K 1/4W R.NETWORK	
	R350	QRE141J-823Y	82K 1/4W R.NETWORK	
	R351	QRJ146J-390X	39 1/4W R.NETWORK	C J
		QRZ9005-101X	100 FUSIBLE	U UB UF US UT
		QRZ9005-390X	39 FUSIBLE RES.	B E EE EN
	R353	QRE141J-223Y	22K 1/4W R.NETWORK	
	R354	QRE141J-223Y	22K 1/4W R.NETWORK	
	R355	QRE141J-152Y	1.5K 1/4W R.NETWORK	U UB UF US UT
		QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R361	QRJ146J-681X	680 1/4W R.NETWORK	
	R362	QRJ146J-681X	680 1/4W R.NETWORK	
	R363	QRJ146J-471X	470 1/4W R.NETWORK	
	R364	QRJ146J-471X	470 1/4W R.NETWORK	
	R365	QRE141J-103Y	10K 1/4W R.NETWORK	
	R366	QRE141J-103Y	10K 1/4W R.NETWORK	
	R371	QRE141J-154Y	150K 1/4W R.NETWORK	
	R372	QRE141J-154Y	150K 1/4W R.NETWORK	
	R381	QRJ146J-4R7X	4.7 1/4W R.NETWORK	B E EE EN
	R382	QRJ146J-4R7X	4.7 1/4W R.NETWORK	B E EE EN
	R383	QRE141J-103Y	10K 1/4W R.NETWORK	
	R384	QRE141J-103Y	10K 1/4W R.NETWORK	
	R391	QRE141J-181Y	180 1/4W R.NETWORK	
	R392	QRE141J-181Y	180 1/4W R.NETWORK	
	R395	QRE141J-272Y	2.7K 1/4W R.NETWORK	
	R396	QRE141J-272Y	2.7K 1/4W R.NETWORK	
	R401	QRJ146J-100X	10 1/4W R.NETWORK	J
		QRZ9005-100X	10 FUSIBLE	EXCEPT J
	R402	QRJ146J-470X	47 1/4W R.NETWORK	J
		QRZ9005-470X	47 FUSIBLE	EXCEPT J
	R403	QRE141J-122Y	1.2K 1/4W R.NETWORK	
	R404	QRE141J-122Y	1.2K 1/4W R.NETWORK	
	R405	QAD0095-4R7Z	4.7Ω POSITIVE THE	EXCEPT J
		QRJ146J-4R7X	4.7 1/4W R.NETWORK	J
	R406	QRE141J-621Y	620 1/4W R.NETWORK	
	R407	QRE141J-561Y	560 1/4W R.NETWORK	
	R408	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R409	QRE141J-103Y	10K 1/4W R.NETWORK	
	R410	QRE141J-103Y	10K 1/4W R.NETWORK	
	R411	QRE141J-473Y	47K 1/4W R.NETWORK	
	R412	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R413	QRE141J-103Y	10K 1/4W R.NETWORK	
	R414	QRE141J-104Y	100K 1/4W R.NETWORK	
	R415	QRE141J-473Y	47K 1/4W R.NETWORK	
	R416	QRE141J-103Y	10K 1/4W R.NETWORK	
	R417	QRE141J-101Y	100 1/4W R.NETWORK	
	R418	QRE141J-101Y	100 1/4W R.NETWORK	
	R420	QRJ146J-100X	10 1/4W R.NETWORK	J
		QRZ9005-100X	10 FUSIBLE	EXCEPT J
	R421	QRE141J-470Y	47 1/4W R.NETWORK	
	R502	QRE141J-103Y	10K 1/4W R.NETWORK	
	R503	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R504	QRE141J-181Y	180 1/4W R.NETWORK	
	R505	QRE141J-271Y	270 1/4W R.NETWORK	
	R506	QRE141J-220Y	22 1/4W R.NETWORK	
	R507	QRE141J-103Y	10K 1/4W R.NETWORK	
	R508	QRE141J-103Y	10K 1/4W R.NETWORK	
	R509	QRE141J-103Y	10K 1/4W R.NETWORK	
	R510	QRE141J-103Y	10K 1/4W R.NETWORK	
	R530	QRE141J-103Y	10K 1/4W R.NETWORK	
	R531	QRE141J-103Y	10K 1/4W R.NETWORK	
	R532	QRE141J-103Y	10K 1/4W R.NETWORK	
	R533	QRE141J-103Y	10K 1/4W R.NETWORK	
	R705	QRE141J-393Y	39K 1/4W R.NETWORK	
	R706	QRE141J-393Y	39K 1/4W R.NETWORK	
	R707	QRE141J-331Y	330 1/4W R.NETWORK	
	R711	QRV14CF-1002Y	10K 1/4W M.FILM	
	R712	QRV14CF-1002Y	10K 1/4W M.FILM	
	R715	QRE141J-103Y	10K 1/4W R.NETWORK	
	R716	QRE141J-103Y	10K 1/4W R.NETWORK	
	R719	QRE141J-331Y	330 1/4W R.NETWORK	
	R720	QRE141J-331Y	330 1/4W R.NETWORK	
	R721	QRE141J-153Y	15K 1/4W R.NETWORK	
	R722	QRE141J-153Y	15K 1/4W R.NETWORK	
	R725	QRE141J-331Y	330 1/4W R.NETWORK	
	R726	QRE141J-331Y	330 1/4W R.NETWORK	
	R727	QRE141J-223Y	22K 1/4W R.NETWORK	
	R728	QRE141J-223Y	22K 1/4W R.NETWORK	
	R729	QRE141J-913Y	91K 1/4W R.NETWORK	
	R730	QRE141J-913Y	91K 1/4W R.NETWORK	
	R733	QRE141J-102Y	1K 1/4W R.NETWORK	
	R745	QRE141J-471Y	470 1/4W R.NETWORK	
	R746	QRE141J-224Y	220K 1/4W R.NETWORK	
	R747	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R748	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R749	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R760	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R761	QRJ146J-471X	470 1/4W R.NETWORK	J
		QRL022J-471	470 2W OXIDE METAL	EXCEPT J
	R764	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R765	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R766	QRE141J-392Y	3.9K 1/4W R.NETWORK	
	R767	QRE141J-392Y	3.9K 1/4W R.NETWORK	
	R789	QRE141J-102Y	1K 1/4W R.NETWORK	
	R791	QRE141J-221Y	220 1/4W R.NETWORK	
	R792	QRE141J-221Y	220 1/4W R.NETWORK	
	R793	QRE141J-103Y	10K 1/4W R.NETWORK	
	R794	QRE141J-103Y	10K 1/4W R.NETWORK	
	R795	QRE141J-103Y	10K 1/4W R.NETWORK	
	R796	QRE141J-103Y	10K 1/4W R.NETWORK	
	R1111	QRZ9044-335	3.3M COMPOSITION	C J
		OTHERS		
		EMW10733-103	CIR BOARD	B
		EMW10733-103	CIR BOARD	C
		EMW10733-103	CIR BOARD	E
		EMW10733-103	CIR BOARD	EE
		EMW10733-103	CIR BOARD	EN
		EMW10733-103	CIR BOARD	J
		EMW10733-103	CIR BOARD	U
		EMW10733-103	CIR BOARD	UB
		EMW10733-103	CIR BOARD	UF
		EMW10733-103	CIR BOARD	US
		EMW10733-103	CIR BOARD	UT
		E61380-029	CAUTION LABEL	C J
		E67132-TR50	FUSE LABEL	B E EE EN
	J105	QNB0089-001	SPEAKER TERMINAL	
	J106	QNS0016-001	3.5 JACK	
	J301	QMS3L40-ED0H	PIN JACK	
	J701	QNN0174-001	PIN JACK	
	J702	QNN0174-001	PIN JACK	
	J703	QNN0284-001	PIN JACK	
	L301	QQLZ005-R45	INDUCTOR	
	L302	QQLZ005-R45	INDUCTOR	
	L401	QQL231K-1R0Y	INDUCTOR I.M	
	S501	QSW0499-001Z	PUSH SW I.M	
	S502	QSW0499-001Z	PUSH SW I.M	
	S503	QSW0499-001Z	PUSH SW I.M	
	S504	QSW0499-001Z	PUSH SW I.M	
	S505	QSW0499-001Z	PUSH SW I.M	
	S506	QSW0499-001Z	PUSH SW I.M	
	S507	QSW0499-001Z	PUSH SW I.M	
	S508	QSW0499-001Z	PUSH SW I.M	
	S509	QSW0499-001Z	PUSH SW I.M	B E EE EN
	S510	QSW0499-001Z	PUSH SW I.M	B E EE EN
	S511	QSW0499-001Z	PUSH SW I.M	B E EE EN
	S512	QSW0499-001Z	PUSH SW I.M	B E EE EN
	X501	QAX0250-001	CRYSTAL	
	CN002	EWS284-010	SOCKET WIRE ASSY	
	CN011	QGA3901C1-04	4P CONNECTOR	
	CN012	QGD2501C1-05Z	SOCKET I.M	
	CN301	QGB2510J1-14	CONNECTOR	
	CN303	QGB2510K2-14	CONNECTOR	
	CN401	QGA3901C1-04	4P CONNECTOR	
	CN402	EWS284-009	SOCKET WIRE ASSY	
	CN403	QGD2501C1-03Z	SOCKET I.M	
	CN501	QGF1205F1-25	CONNECTOR	
	CN502	EWS265-A413	SOCKET WIRE ASSY	B E EE EN

■Electrical Parts List(Main P.C.B RX-EX70/70R)

⚠	Item	Parts Number	Description	Area
	CN601	QGB2510K2-12	CONNECTOR	
	CN602	QGB2510J1-12	CONNECTOR	
	CN701	QGF1205C1-25	CONNECTOR	
	CN702	QGB2510J1-12	CONNECTOR	
	CN703	QGD2501C1-03Z	SOCKET I.M	
	CN713	QGD2501C1-03Z	SOCKET I.M	
	CN714	QGD2501C1-03Z	SOCKET I.M	
	DI500	QLF0029-002	FLUORESCENT DISPLAY TUBE	
	EP001	QNZ0136-001Z	IM EARTH PLATE	
	EP002	QNZ0136-001Z	IM EARTH PLATE	
	EP003	LV40417-001A	CONNECTOR BRACKET	U UB UF US UT
	FH501	LE30640-001A	FL HOLDER	
	FH502	LE30640-002A	FL HOLDER	
	FS501	E3400-431	FELT SPACER	
	FS502	E3400-431	FELT SPACER	
	FT001	QNG0020-001Z	FUSE CLIP	
	FT002	QNG0020-001Z	FUSE CLIP	
	FT003	QNG0020-001Z	FUSE CLIP	U UB UF US UT
	FT004	QNG0020-001Z	FUSE CLIP	U UB UF US UT
	FW002	EWR35B-13LST	FLAT WIRE	
	FW401	EWR33B-13LST	FLAT WIRE	
	FW703	EWR36B-20LST	FLAT WIRE	
	JS501	QSW0502-001	SW	
	RY301	QSK0042-001	RELAY	
	SP501	VYH7653-001	I.C.PROTECTOR	
	SP502	VYH7653-006	I.C.PROTECTOR	
	SW001	QSW0513-001	SLIDE SW.	U UB UF US UT
	TB001	QNZ0079-001Z	TAB I.M	
	TB002	QNZ0079-001Z	TAB I.M	
	TW007	QUB110-12ZLPP	CONNECTOR WIRE ASSY	C J

■Electrical Parts List(Tuner P.C.B. RX-EX70 C/J)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC102	LA1837	I.C(MONO-ANALOG)	
	IC121	LC72131	I.C(M)	
		DIODES		
	D121	1SS133-T2	SI.DIODE	
	D123	1SS133-T2	SI.DIODE	
	D129	1SS133-T2	SI.DIODE	
	D130	MTZJ10C-T2	ZENER	
		TRANSISTORS		
	Q101	2SC461/BC/-T	SILICON	
	Q102	2SC535/BC/-T	SILICON	
	Q103	2SC461/BC/-T	SILICON	
	Q121	DTA124ES-T	SILICON	
	Q123	2SC2060/QR/-T	SILICON	
		CAPACITORS		
	C101	QDYB1CM-103Y	0.01MF 16V C CAP.	
	C102	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C103	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C104	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C105	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C107	QETC1EM-226ZM	22MF 25V E.CAP.	
	C109	QETC1EM-226ZM	22MF 25V E.CAP.	
	C111	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C112	QDCB1HJ-120Y	12PF 50V C CAP.	
	C117	QCSB1HK-5R6Y	5.6PF 50V CER.CAP.	
	C118	QCSB1HJ-150Y	15PF 50V CER.CAP.	
	C121	QDCB1HJ-180Y	18PF 50V C CAP.	
	C122	QDCB1HJ-180Y	18PF 50V C CAP.	
	C123	QDX31EM-473Z	0.047MF 25V C CAP.	
	C126	QCBB1HK-101Y	100PF 50V CER.CAP.	
	C128	QENB1HM-474	0.47MF 50V NP E.CAP.	
	C129	QCGB1HK-102	1000PF 50V CER.CAP.	
	C130	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C133	QETC1EM-226ZM	22MF 25V E.CAP.	
	C134	QCBB1HK-331Y	330PF 50V CER.CAP.	
	C135	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C136	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C137	QCBB1HK-221Y	220PF 50V CER.CAP.	
	C139	QFLB1HJ-333	0.033MF 50V MYLAR CAP.	
	C140	QFLB1HJ-333	0.033MF 50V MYLAR CAP.	
	C141	QDX31EM-473Z	0.047MF 25V C CAP.	
	C143	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C144	QDX31EM-473Z	0.047MF 25V C CAP.	
	C146	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C147	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C148	QETN1HM-474Z	0.47MF 50V AL E.CAP.	
	C149	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C150	QETC1EM-226ZM	22MF 25V E.CAP.	
	C156	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C157	QDX31EM-473Z	0.047MF 25V C CAP.	
	C158	QETC1EM-226ZM	22MF 25V E.CAP.	
	C161	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C162	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C163	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C164	QDX31EM-473Z	0.047MF 25V C CAP.	
	C168	QCZ0205-155	1.5MF 25V C.CAP.	
	C180	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C181	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C182	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C183	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C184	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C185	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C186	QETN1HM-105Z	1MF 50V AL E.CAP.	
		RESISTORS		
	R102	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R103	QRE141J-221Y	220 1/4W R.NETWORK	
	R104	QRE141J-272Y	2.7K 1/4W R.NETWORK	
	R105	QRE141J-391Y	390 1/4W R.NETWORK	
	R106	QRE141J-102Y	1K 1/4W R.NETWORK	
	R107	QRE141J-561Y	560 1/4W R.NETWORK	
	R108	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R109	QRE141J-221Y	220 1/4W R.NETWORK	
	R115	QRE141J-104Y	100K 1/4W R.NETWORK	
	R119	QRE141J-103Y	10K 1/4W R.NETWORK	
	R121	QRE141J-473Y	47K 1/4W R.NETWORK	
	R122	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R124	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R126	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R127	QRE141J-822Y	8.2K 1/4W R.NETWORK	
	R128	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R129	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R130	QRJ146J-680X	68 1/4W R.NETWORK	
	R132	QRE141J-102Y	1K 1/4W R.NETWORK	
	R133	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R134	QRE141J-102Y	1K 1/4W R.NETWORK	
	R140	QRE141J-183Y	18K 1/4W CARBON RES.	
	R141	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R142	QRE141J-470Y	47 1/4W R.NETWORK	
	R143	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R144	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R145	QRE141J-103Y	10K 1/4W R.NETWORK	
	R146	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R147	QRE141J-153Y	15K 1/4W R.NETWORK	
	R148	QRE141J-561Y	560 1/4W R.NETWORK	
	R150	QRE141J-101Y	100 1/4W R.NETWORK	
	R157	QRE141J-682Y	6.8K 1/4W R.NETWORK	
	R158	QRE141J-682Y	6.8K 1/4W R.NETWORK	
	R161	QRE141J-102Y	1K 1/4W R.NETWORK	
	R162	QRE141J-102Y	1K 1/4W R.NETWORK	
	R163	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R164	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R181	QRE141J-102Y	1K 1/4W R.NETWORK	
	R182	QRE141J-103Y	10K 1/4W R.NETWORK	
	R183	QRE141J-103Y	10K 1/4W R.NETWORK	
	R184	QRE141J-103Y	10K 1/4W R.NETWORK	
		OTHERS		
		EMW10684-004	PRINTED BOARD	
		EMW10684-004	PRINTED BOARD	
	L111	QQL121K-150Y	INDUCTOR I.M	
	T111	QQR0592-001	RF COIL	
	T141	QQR0613-001	I.F.TRANSFORMER	
	T142	QAX0303-001	CERAMIC FILTER	
	X121	QAX0251-001Z	RESONATOR I	
	AT101	QNB0008-001	ANT TERMINAL	
	CF101	QAX0284-001Z	CERAMIC FILTER	
	CF102	QAX0284-001Z	CERAMIC FILTER	
	CN111	QGB2510K1-12	CONNECTOR	
	FL141	QQR0590-001	LOWPASS FILTER	
	FL142	QQR0590-001	LOWPASS FILTER	
	RF101	EAF2207-001	FRONT END	

■Electrical parts List(Tuner P.C.B. RX-EX70 U/UB/UF/US/UT)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC102	LA1837	I.C(MONO-ANALOG)	
	IC121	LC72131	I.C(M)	
		DIODES		
	D121	1SS133-T2	SI.DIODE	
	D123	1SS133-T2	SI.DIODE	
	D126	1SS133-T2	SI.DIODE	
	D129	1SS133-T2	SI.DIODE	
	D130	MTZJ10C-T2	ZENER	
		TRANSISTORS		
	Q101	2SC461/BC/-T	SILICON	
	Q102	2SC535/BC/-T	SILICON	
	Q103	2SC461/BC/-T	SILICON	
	Q121	DTA124ES-T	SILICON	
	Q123	2SC2060/QR/-T	SILICON	
		CAPACITORS		
	C101	QDYB1CM-103Y	0.01MF 16V C CAP.	
	C102	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C103	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C104	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C105	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C107	QETC1EM-226ZM	22MF 25V E.CAP.	
	C109	QETC1EM-226ZM	22MF 25V E.CAP.	
	C111	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C112	QDCB1HJ-120Y	12PF 50V C CAP.	
	C117	QCSB1HK-5R6Y	5.6PF 50V CER.CAP.	
	C118	QCSB1HJ-150Y	15PF 50V CER.CAP.	
	C121	QDCB1HJ-180Y	18PF 50V C CAP.	
	C122	QDCB1HJ-180Y	18PF 50V C CAP.	
	C123	QDX31EM-473Z	0.047MF 25V C CAP.	
	C126	QCBB1HK-101Y	100PF 50V CER.CAP.	
	C128	QENB1HM-474	0.47MF 50V NP E.CAP.	
	C129	QCGB1HK-102	1000PF 50V CER.CAP.	
	C130	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C133	QETC1EM-226ZM	22MF 25V E.CAP.	
	C134	QCBB1HK-331Y	330PF 50V CER.CAP.	
	C135	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C136	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C137	QCBB1HK-101Y	100PF 50V CER.CAP.	
	C137	QCBB1HK-561Y	560PF 50V CER.CAP.	
	C139	QFLB1HJ-223	0.022MF 50V MYLAR CAP.	
	C140	QFLB1HJ-223	0.022MF 50V MYLAR CAP.	
	C141	QDX31EM-473Z	0.047MF 25V C CAP.	
	C143	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C144	QDX31EM-473Z	0.047MF 25V C CAP.	
	C146	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C147	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C148	QETN1HM-474Z	0.47MF 50V AL E.CAP.	
	C149	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C150	QETC1EM-226ZM	22MF 25V E.CAP.	
	C156	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C157	QDX31EM-473Z	0.047MF 25V C CAP.	
	C158	QETC1EM-226ZM	22MF 25V E.CAP.	
	C161	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C162	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C163	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C164	QDX31EM-473Z	0.047MF 25V C CAP.	
	C168	QCZ0205-155	1.5MF 25V C.CAP.	
	C180	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C181	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C182	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C183	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C184	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C185	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C186	QETN1HM-105Z	1MF 50V AL E.CAP.	
		RESISTORS		
	R102	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R103	QRE141J-221Y	220 1/4W R.NETWORK	
	R104	QRE141J-272Y	2.7K 1/4W R.NETWORK	
	R105	QRE141J-391Y	390 1/4W R.NETWORK	
	R106	QRE141J-102Y	1K 1/4W R.NETWORK	
	R107	QRE141J-561Y	560 1/4W R.NETWORK	
	R108	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R109	QRE141J-221Y	220 1/4W R.NETWORK	
	R115	QRE141J-104Y	100K 1/4W R.NETWORK	
	R119	QRE141J-103Y	10K 1/4W CARBON RES.	
	R121	QRE141J-473Y	47K 1/4W R.NETWORK	
	R122	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R124	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R126	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R127	QRE141J-822Y	8.2K 1/4W R.NETWORK	
	R128	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R129	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R130	QRZ9005-680X	68 FUSIBLE	
	R132	QRE141J-102Y	1K 1/4W R.NETWORK	
	R133	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R133	QRE141J-822Y	8.2K 1/4W R.NETWORK	
	R134	QRE141J-102Y	1K 1/4W R.NETWORK	
	R140	QRE141J-183Y	18K 1/4W CARBON RES.	
	R141	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R142	QRE141J-470Y	47 1/4W R.NETWORK	
	R143	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R144	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R145	QRE141J-103Y	10K 1/4W CARBON RES.	
	R146	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R147	QRE141J-273Y	27K 1/4W R.NETWORK	
	R148	QRE141J-561Y	560 1/4W R.NETWORK	
	R150	QRE141J-101Y	100 1/4W R.NETWORK	
	R157	QRE141J-682Y	6.8K 1/4W R.NETWORK	
	R158	QRE141J-682Y	6.8K 1/4W R.NETWORK	
	R161	QRE141J-102Y	1K 1/4W R.NETWORK	
	R162	QRE141J-102Y	1K 1/4W R.NETWORK	
	R163	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R164	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R181	QRE141J-102Y	1K 1/4W R.NETWORK	
	R182	QRE141J-103Y	10K 1/4W CARBON RES.	
	R183	QRE141J-103Y	10K 1/4W CARBON RES.	
	R184	QRE141J-103Y	10K 1/4W CARBON RES.	
		OTHERS		
		EMW10684-004	PRINTED BOARD	
	L111	QQL121K-150Y	INDUCTOR I.M	
	T111	QQR0592-001	RF COIL	
	T141	QQR0613-001	I.F.TRANSFORMER	
	T142	QAX0303-001	CERAMIC FILTER	
	X121	QAX0251-001Z	RESONATOR I	
	AT101	QNB0008-001	ANT TERMINAL	
	CF101	QAX0285-001Z	CERAMIC FILTER	
	CF102	QAX0285-001Z	CERAMIC FILTER	
	CN111	QGB2510K1-12	CONNECTOR	
	FL141	QQR0590-001	LOWPASS FILTER	
	FL142	QQR0590-001	LOWPASS FILTER	
	RF101	EAF2207-001	FRONT END	

■Electrical Parts List (Tuner P.C.B. RX-EX70R B/E/EE/EN)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC102	LA1837	I.C(MONO-ANALOG)	
	IC121	LC72131	I.C(M)	
	IC191	LC7073	I.C(DIGI-MOS)	
	IC192	SAA6579	I.C(M)	
		DIODES		
	D121	1SS133-T2	SI.DIODE	
	D123	1SS133-T2	SI.DIODE	
	D126	1SS133-T2	SI.DIODE	
	D129	1SS133-T2	SI.DIODE	
	D130	MTZJ10C-T2	ZENER	
	D131	1SS133-T2	SI.DIODE	
		TRANSISTORS		
	Q101	2SC461/BC/-T	SILICON	
	Q102	2SC535/BC/-T	SILICON	
	Q103	2SC461/BC/-T	SILICON	
	Q111	2SD2144S/VW/-T	SILICON	
	Q112	2SD2144S/VW/-T	SILICON	
	Q113	2SD2144S/VW/-T	SILICON	
	Q114	2SD2144S/VW/-T	SILICON	
	Q121	DTA124ES-T	SILICON	
	Q123	2SC2060/QR/-T	SILICON	
		CAPACITORS		
	C101	QDYB1CM-103Y	0.01MF 16V C CAP.	
	C102	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C103	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C104	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C105	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C107	QETC1EM-226ZM	22MF 25V E.CAP.	
	C109	QETC1EM-226ZM	22MF 25V E.CAP.	
	C111	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C112	QDCB1HJ-120Y	12PF 50V C CAP.	
	C113	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C117	QCSB1HK-5R6Y	5.6PF 50V CER.CAP.	
	C118	QCSB1HJ-150Y	15PF 50V CER.CAP.	
	C121	QDCB1HJ-180Y	18PF 50V C CAP.	
	C122	QDCB1HJ-180Y	18PF 50V C CAP.	
	C123	QDX31EM-473Z	0.047MF 25V C CAP.	
	C126	QCBB1HK-101Y	100PF 50V CER.CAP.	
	C128	QENB1HM-474	0.47MF 50V NP E.CAP.	
	C129	QCGB1HK-102	1000PF 50V CER.CAP.	
	C130	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C133	QETC1EM-226ZM	22MF 25V E.CAP.	
	C134	QDXB1CM-222Y	2200PF 16V C CAP.	
	C135	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C136	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C137	QCBB1HK-391Y	390PF 50V CER.CAP.	
	C139	QFLB1HJ-473	0.047MF 50V MYLAR CAP.	
	C140	QFLB1HJ-473	0.047MF 50V MYLAR CAP.	
	C141	QDX31EM-473Z	0.047MF 25V C CAP.	
	C143	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C144	QDX31EM-473Z	0.047MF 25V C CAP.	
	C146	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C147	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C148	QETN1HM-474Z	0.47MF 50V AL E.CAP.	
	C149	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C150	QETC1EM-226ZM	22MF 25V E.CAP.	
	C156	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C157	QDX31EM-473Z	0.047MF 25V C CAP.	
	C158	QETC1EM-226ZM	22MF 25V E.CAP.	
	C161	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C162	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C163	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C164	QDX31EM-473Z	0.047MF 25V C CAP.	
	C168	QCZ0205-155	1.5MF 25V C.CAP.	
	C180	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C181	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C182	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C183	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C184	QETC1EM-107Z	100MF 25V AL E.CAP.	
	C185	QETN1HM-105Z	1MF. 50V AL E.CAP.	
	C186	QETN1HM-105Z	1MF 50V AL E.CAP.	
	C191	QCBB1HK-820Y	82PF 50V CER.CAP.	
	C192	QCSB1HJ-470	47PF 50V CER.CAP.	
	C193	QCBB1HK-561Y	560PF 50V CER.CAP.	
	C194	QDVB1EZ-223Y	0.022MF 25V C CAP.	
	C195	QCBB1HK-331Y	330PF 50V CER.CAP.	
	C196	QETC1EM-226ZM	22MF 25V E.CAP.	
	C197	QCZ0205-155	1.5MF 25V C.CAP.	
	C199	QETC1EM-226ZM	22MF 25V E.CAP.	
		RESISTORS		
	R102	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R103	QRE141J-221Y	220 1/4W R.NETWORK	
	R104	QRE141J-272Y	2.7K 1/4W R.NETWORK	
	R105	QRE141J-391Y	390 1/4W R.NETWORK	
	R106	QRE141J-102Y	1K 1/4W R.NETWORK	
	R107	QRE141J-561Y	560 1/4W R.NETWORK	
	R108	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R109	QRE141J-221Y	220 1/4W R.NETWORK	
	R110	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R111	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R112	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R113	QRE141J-103Y	10K 1/4W R.NETWORK	
	R114	QRE141J-122Y	1.2K 1/4W R.NETWORK	
	R115	QRE141J-104Y	100K 1/4W R.NETWORK	
	R116	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R119	QRE141J-103Y	10K 1/4W R.NETWORK	
	R121	QRE141J-473Y	47K 1/4W R.NETWORK	
	R122	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R124	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R126	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R127	QRE141J-822Y	8.2K 1/4W R.NETWORK	
	R128	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R129	QRE141J-222Y	2.2K 1/4W R.NETWORK	
	R130	QRZ9005-680X	68 FUSIBLE	
	R131	QRE141J-103Y	10K 1/4W R.NETWORK	
	R132	QRE141J-102Y	1K 1/4W R.NETWORK	
	R133	QRE141J-562Y	5.6K 1/4W R.NETWORK	
		QRE141J-822Y	8.2K 1/4W R.NETWORK	
	R134	QRE141J-102Y	1K 1/4W R.NETWORK	
	R140	QRE141J-563Y	56K 1/4W R.NETWORK	
	R141	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R142	QRE141J-470Y	47 1/4W R.NETWORK	
	R143	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R144	QRE141J-332Y	3.3K 1/4W R.NETWORK	
	R145	QRE141J-103Y	10K 1/4W R.NETWORK	
	R146	QRE141J-562Y	5.6K 1/4W R.NETWORK	
	R147	QRE141J-273Y	27K 1/4W R.NETWORK	
	R148	QRE141J-561Y	560 1/4W R.NETWORK	
	R150	QRE141J-101Y	100 1/4W R.NETWORK	
	R157	QRE141J-182Y	1.8K 1/4W R.NETWORK	
	R158	QRE141J-182Y	1.8K 1/4W R.NETWORK	
	R161	QRE141J-102Y	1K 1/4W R.NETWORK	
	R162	QRE141J-102Y	1K 1/4W R.NETWORK	
	R163	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R164	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R181	QRE141J-102Y	1K 1/4W R.NETWORK	
	R182	QRE141J-103Y	10K 1/4W R.NETWORK	
	R183	QRE141J-103Y	10K 1/4W R.NETWORK	
	R184	QRE141J-103Y	10K 1/4W R.NETWORK	
	R191	QRE141J-222Y	2.2K 1/4W R.NETWORK	
		OTHERS		
		EMW10684-004	PRINTED BOARD	
	L111	QQL121K-150Y	INDUCTOR I.M	
	T111	QQR0591-001	RF COIL	
	T141	QQR0613-001	I.F.TRANSFORMER	
	T142	QAX0303-001	CERAMIC FILTER	
	X121	QAX0251-001Z	RESONATOR I	
	X191	QAX0263-001Z	CRYSTAL	
	X192	QAX0248-001Z	CERA LOCK	
	AT101	QNB0014-001	ANT TERMINAL	
	BK001	E308963-224SM	SHIELD BKT	
	CF101	QAX0285-001Z	CERAMIC FILTER	
	CF102	QAX0285-001Z	CERAMIC FILTER	
	CN111	QGB2510K1-12	CONNECTOR	
	CN112	QGA2001C1-05	5P PLUG ASSY	
	FL141	QQR0590-001	LOWPASS FILTER	
	FL142	QQR0590-001	LOWPASS FILTER	
	RF101	QAU0005-001	FRONT END	
	SC001	QUB112-07Z4PP	WIRE	

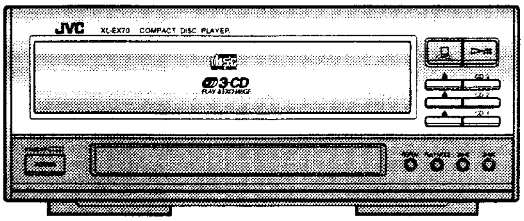
■Accessories List

Block No. M2MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	LVT0092-001A	INSTRUCTION BOOK	1		J
		LVT0092-002A	INSTRUCTION BOOK	1		B
		LVT0092-003A	INSTRUCTION BOOK	1		C
		LVT0092-004A	INSTRUCTION BOOK	1		E EN
		LVT0092-005A	INSTRUCTION BOOK	1		EN
		LVT0092-006A	INSTRUCTION BOOK	1		EE
		LVT0092-007A	INSTRUCTION BOOK	1		U UB UF US UT
	2	QPC02503510P	POLY BAG	2		
	3	QAL0014-001	LOOP ANTENNA	1		
	4	RM-SEEX90EU	REMOCON	1		U UB UF US UT
		RM-SEEX90U	REMOCON	1		C J
		RM-SEEX90RU	REMOCON	1		B E EE EN
	5	EWP503-001	ANT.WIRE	1		B E EE EN
	6	R6PPTT/2STS	BATTERY	2		
	7	EWP201-011	ANTENNA WIRE	1		C J U UB UF US UT
	8	LV40580-001A	ATTENTION SHEET	1		J
	9	EWP302-023	SIGNAL CORD	1		
	10	EWP805-012	PLUG WIRE ASSY	2		
	11	BT-52002-1	WARRANTY CARD	1		C
		BT-54008-1	WARRANTY CARD	1		B E EN
		BT-59011-1	WARRANTY CARD	1		UF
	12	QMPP060-183-JD	POWER CORD	1		UB
		QMPS020-183-JC	POWER CORD	1		UF
		QMP1F00-183	POWER CORD	1		C J
⚠		QMP39F0-183	POWER CORD	1		U US E EE EN
		QMP5520-183	POWER CORD	1		B
⚠		QMP7530-183	POWER CORD	1		UT
	13	QAM0027-001	SIEMENS PLUG	2		UT
		QAM0060-001	SIEMENS PLUG	2		U US
	14	BT-20044G	SAFETY SHEET	1		J
	15	BT-51006-1	REGISTER CARD	1		J
	16	LV30258-026A	UB SHEET	1		UB
		LV30258-025A	UB SHEET	1		UB
	17	E300196-172	ENVELOPE	1	XL-EX90 POWER CORD	

INTEGRATED COMPACT SYSTEM

XL-EX70



Area Suffix

C	Canada
J	U.S.A.
U	Other Areas
UB	Hong Kong
UF	China
US	Singapore
UT	Taiwan
B	U.K
E	Continental Europe
EN	Northan Europe
EE	Eastern Europe

- Contents -

Removal of Main Parts ---------- 4-2
Description of Main ICs ---------- 4-12
Standard Schematic Diagrams ---------- 4-19
Location of P. C. Board Parts ---------- 4-22

Removal of Main Patrts

(1) Removing the top cover

1. Remove the two screws A retaining both sides of the top cover and the four screws G retaining the rear side.
2. While raising the rear section and spreading the top cover, pull out the cover from the front panel.

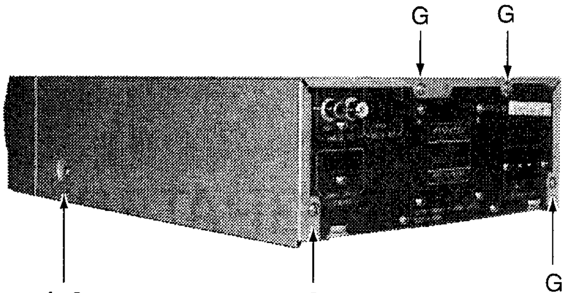


Fig. 1

(2) Removing the front panel assembly

1. Remove the top cover.
2. From the bottom face side, remove the three screws B retaining the front panel assembly.
3. By removing the screw C, disconnect the earth wire.
4. Pull out the card wire (CN802) connected to the out put P.C. board.
5. By removing the three hooks, disassemble the front panel assembly.

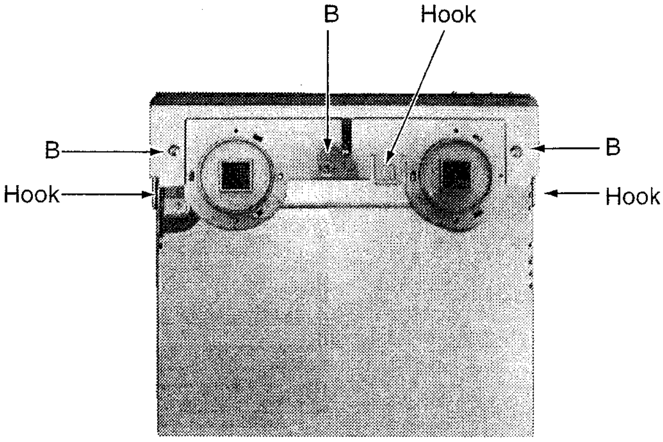


Fig. 2

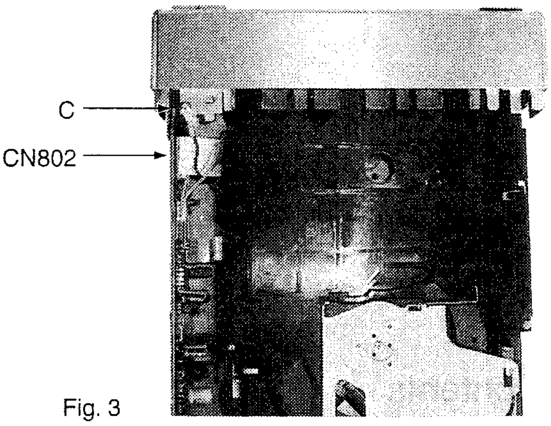


Fig. 3

(3) Removing the rear panel

1. Remove the top cover.
2. Remove the eleven screws H retaining the rear panel.
3. Remove the internal power transformer from the two hooks.

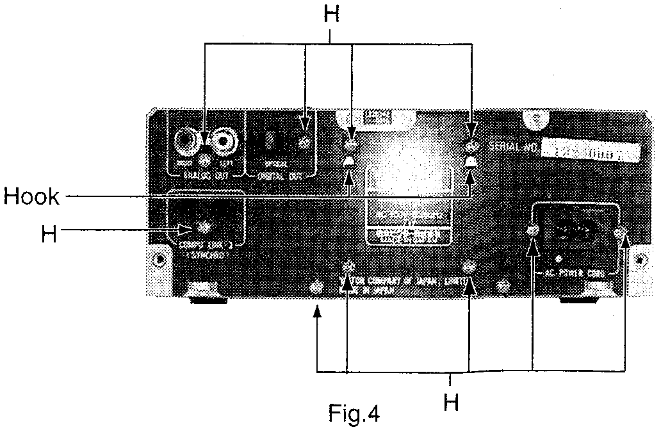


Fig.4

(4) Removing the front cover and system control P.C. board

1. Disassemble the front panel assembly.
2. By removing the four screws D retaining the system control P.C. board, remove this P.C. board.
3. After removing the hook A, remove the two hooks B.

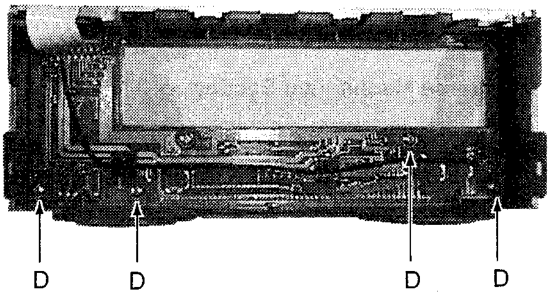


Fig. 5

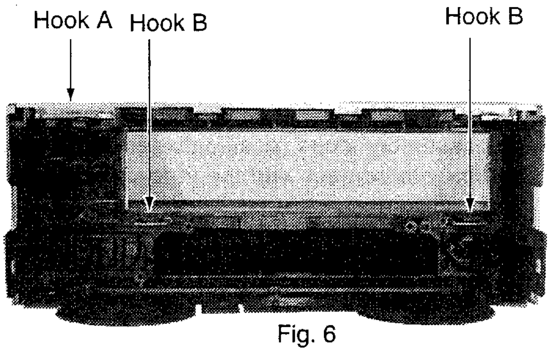


Fig. 6

(5) Removing the output P.C. board

1. Remove the top cover and rear panel.
2. Remove the two screws E retaining the output P.C. board.
3. Pull out the card wires (CN805 and CN804) and connec-tor (CN803).
4. After disconnecting the flat wire (CN806) and connector (CN801), remove the power transformer as necessary.

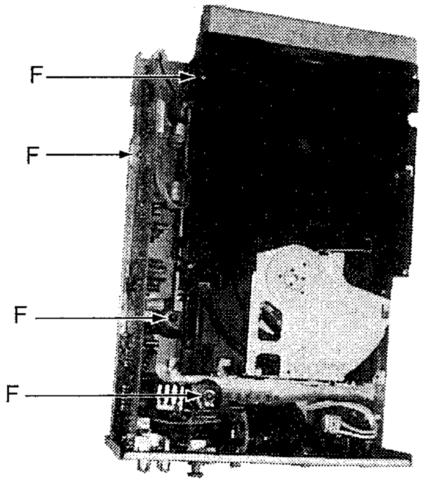


Fig. 7

(6) Removing the CD mechanism assembly

Remove the fourscrews F retaining the CD mechanism assembly.

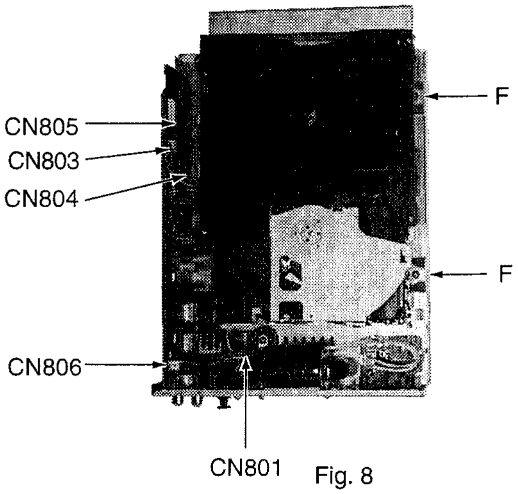


Fig. 8

<< CD Traverse Mechanism Section >>

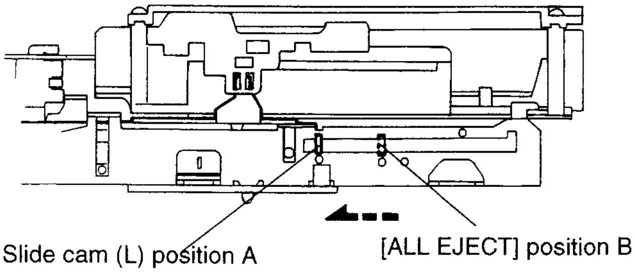
■ Removing the CD mechanism

1. From the body, remove the CD traverse mechanism assembly.

CAUTION: When this mechanism has been removed from the body (wherein all of the sub trays will be housed in the main tray), either of the three sub trays will be set to a playing condition. Therefore, set the corresponding sub tray to the waiting position according to the following steps:

I. Press the hook slider assembly into the position where this assembly stops (position where the assembly comes into contact with the innermost part of the mold section).
II. Next, the sub tray should be enclosed in the main tray while sliding it until a clinking sound is issued.
III. Set the slide cam (L) on the left side of the CD traverse mechanism assembly to the position B ([ALL EJECT] position. Under this condition, the CD traverse mechaism will be kept as it has been hanged down (See Fig.9).

2. Remove the four screws 1 retaining the top cover.
3. Remove the rod from a clamper, and take it out to gether with the top cover.
4. Take out the main tray (under the conditions where all of the sub trays have been enclosed).


Slide cam (L) position A
[ALL EJECT] position B

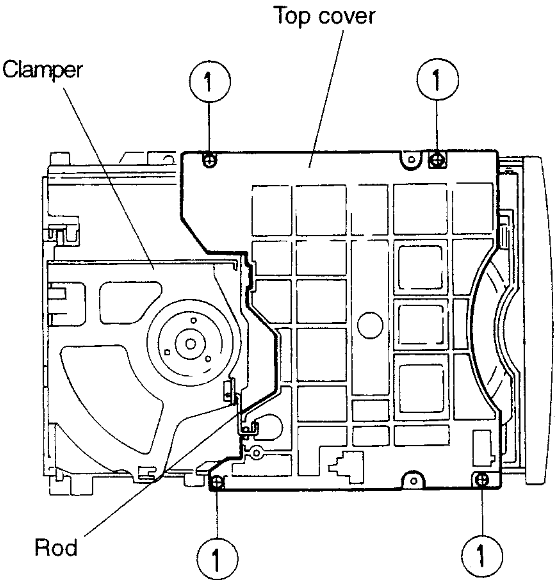
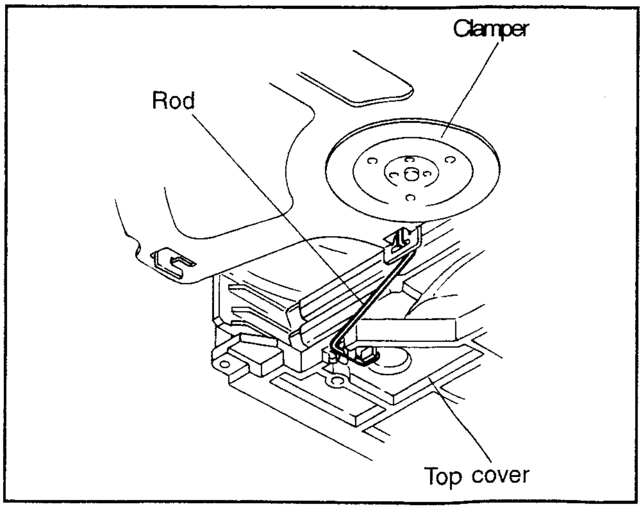

Top cover
Clamper
①
①
①
①
Rod

Fig. 10


Clamper
Rod
Top cover

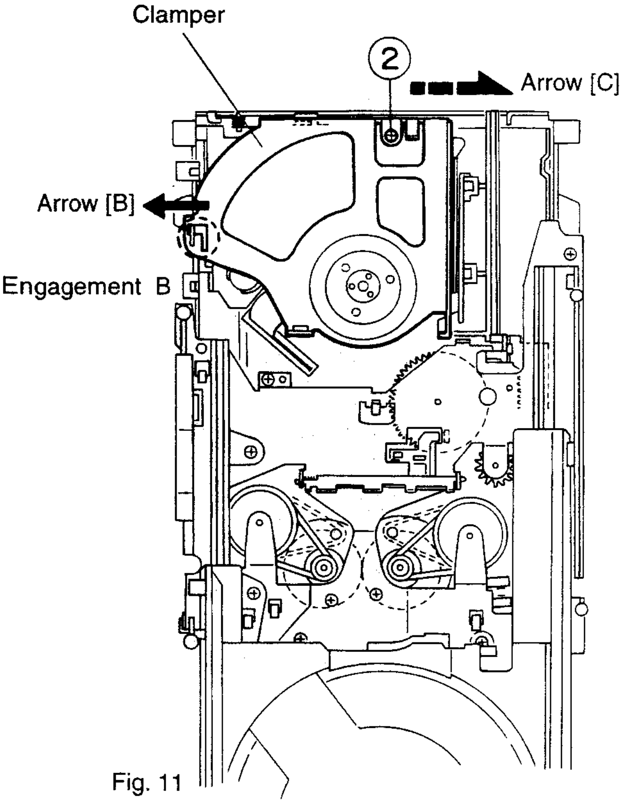

Clamper
②
Arrow [C]
Arrow [B]
Engagement B

Fig. 11

5. Slide the slide cam (L) to the position A.
6. Remove the two screws 2 retaining the clamper.
7. While moving the clamper in the arrow direction [B] and shifting it in the arrow direction [C], disengage the clamper from the engagement section B.

8. Take out the stopper retaining the CD mechanism while moving the moving the center pawl in the arrow direction [D] as shown in Fig. 12.
9. Take out the three insulators from the CD mechanism by using tweezers.
10. Solder the flexible P.C. board outgoing from the CD mechanism as shown in Fig. 13.
11. Remove the flexible P.C. board from the connector CN601 on the CD traverse mechanism control and servo P.C. board.

CAUTION: Since the connection between the flexible P.C. board and CN601 will not be easily disconected, remove this P.C. board by wrapping cloth, etc. around cutting pliers in order not to cause any damage to the P.C. board.

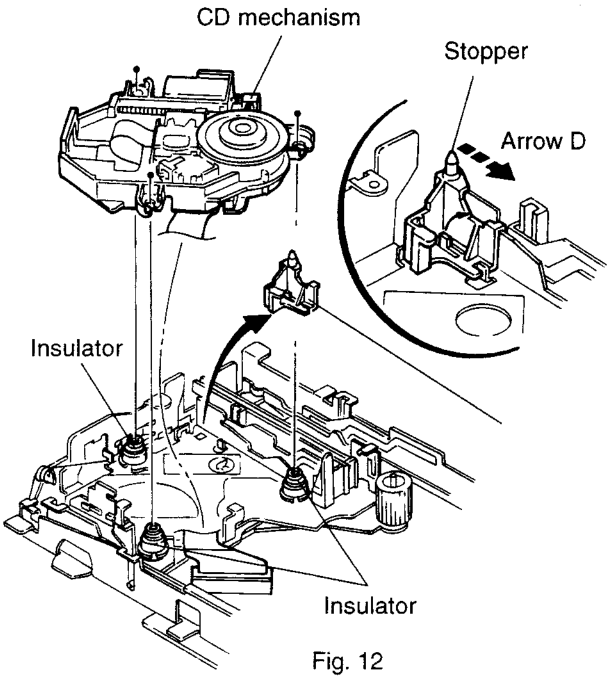


Fig. 12

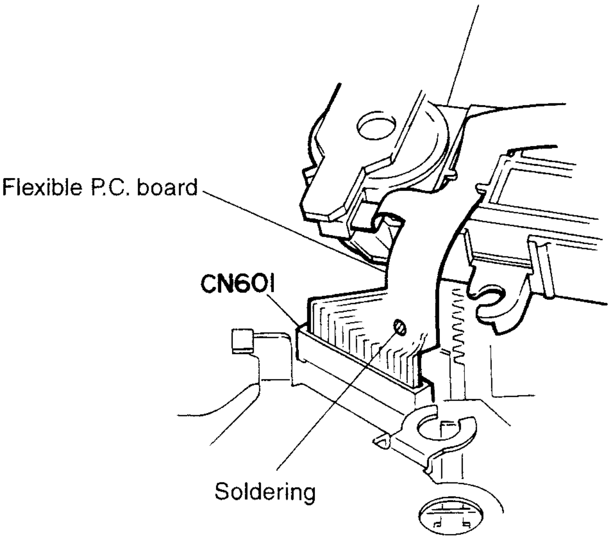


Fig. 13

■ Procedures for Reassembling the CD Mechanism

1. In principle, reassemble the CD mechanism according to the opposite order of removing this mechanism. Be sure to remove any soldering formed in Step 9 of the removing method mentioned above.
2. Be sure to mount the stopper and clamper retaining the CD mechanism under the conditions where the CD mecha-nism has been hanged down.
3. Mount the top cover after aligning the slide cam to the position E.

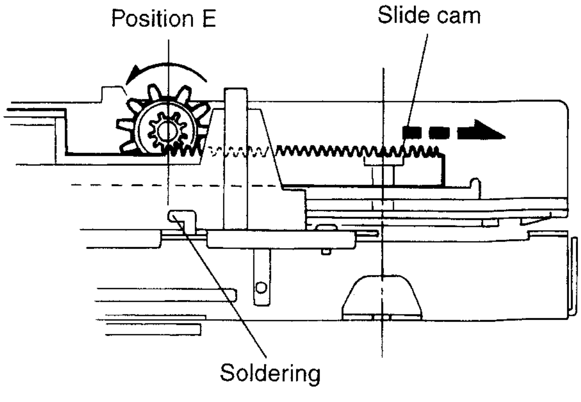


Fig. 14

Removing the CD tray

1. Remove the top cover.
2. Take out the CD tray.
3. Remove the two screws 3 retaining the CD tray guide (L)unit.
4. Disengage the two engagements D retaining the tray guide (L) unit while moving the unit in the arrow direc tion [E].
5. After pulling out the engagement E from the mechanism chassis, remove this chassis together with the CD tray.

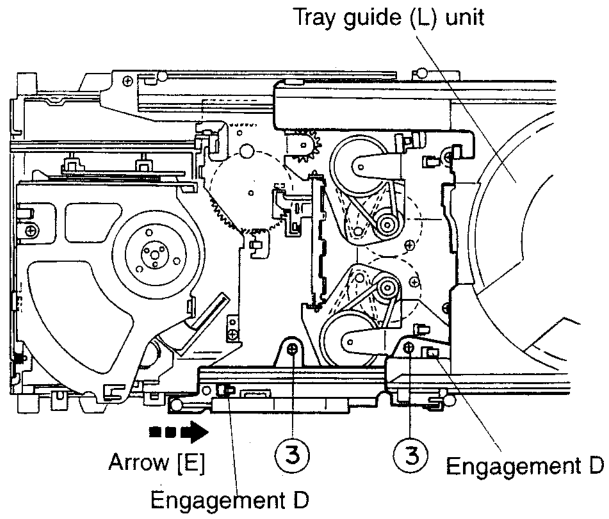

Tray guide (L) unit
Arrow [E]
③
③
Engagement D
Engagement D

Fig. 15

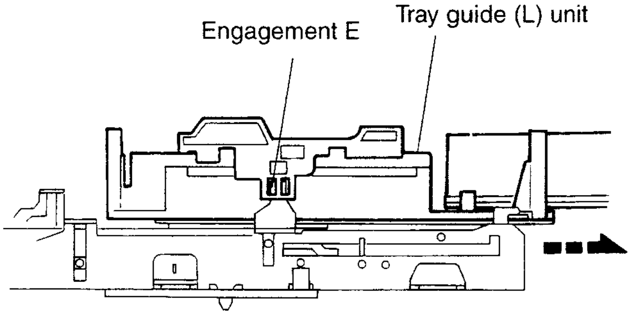

Engagement E
Tray guide (L) unit

Fig. 16

Removing the CD traverse mechanism control & servo P.C.board

1. Remove the top cover.
2. Take out the CD tray.
3. Hang the two belts hanged on the tray & cam drive motor again to the motor as shown in Fig. 17.
4. Remove the two screws 4 retaining the tray & cam drive motor.

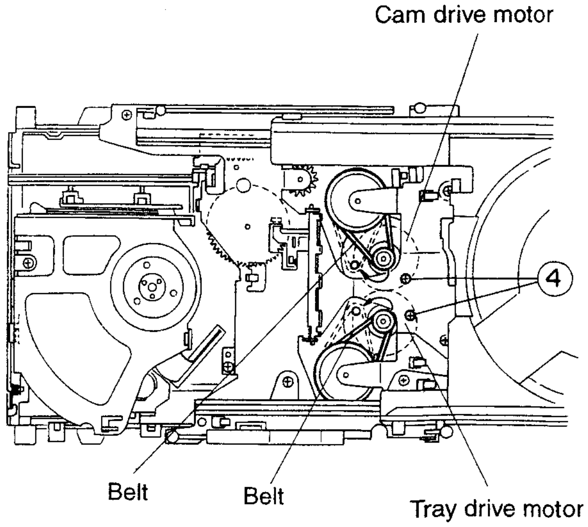

Cam drive motor
④
Belt
Belt
Tray drive motor

Fig. 17

5. After turning over the CD traverse mechanism, remove the four screws 5 retaining the CD traverse mechanism control & servo P.C. board.
6. While keeping the P.C. board afloat, solder the position on the flexible P.C. board outgoing from the CD pickup unit.
7. After turning the CD traverse mechanism back to the normal position, remove the flexible P.C. board from the connector CN601 on the CD traverse mechanism control & servo P.C. board.
8. Remove the CD traverse mechanism control & servo P.C. board.

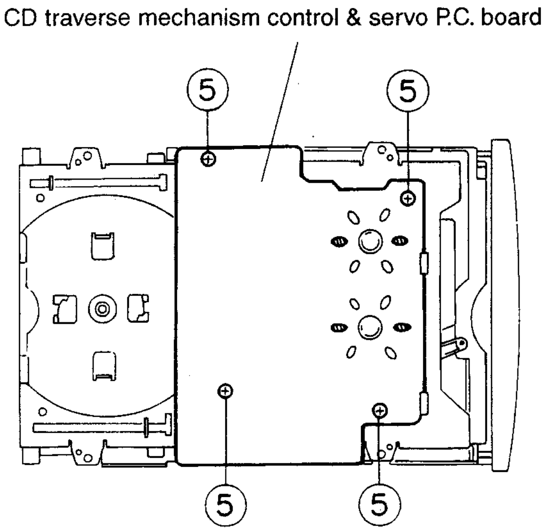

CD traverse mechanism control & servo P.C. board
5
5
5
5

Fig. 18

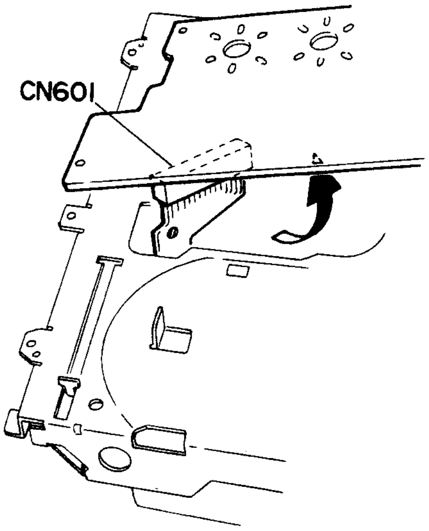


Fig. 19

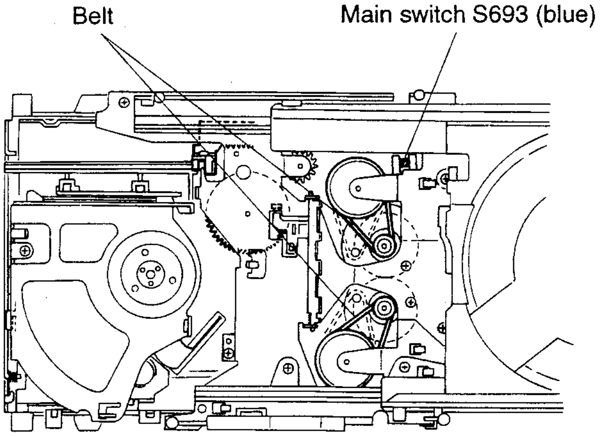

Belt
Main switch S693 (blue)

Fig. 20

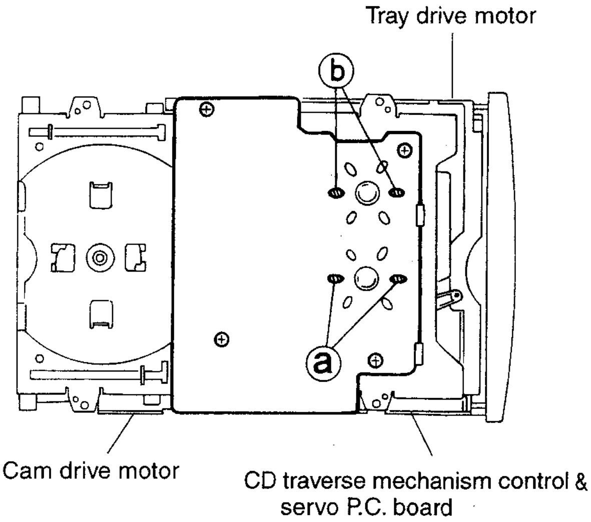

Tray drive motor
b
a
Cam drive motor
CD traverse mechanism control & servo P.C. board

Fig. 21

Removing the CD pickup uni

1. Remove the top cover.
2. Remove the clamper
3. Remove the CD mechanism.
4. Shift the CD pickup unit in the arrow direction.
5. Remove the one screw 6 retaining the shaft holder.
6. Remove the two screws 7 retaining the rack arm, and dismount the S.S. gear assembly.
7. Solder the position on the flexible P.C. board on the back of the CD pickup unit.
8. Remove the flexible P.C. board from the connector on the back of the CD pickup unit.

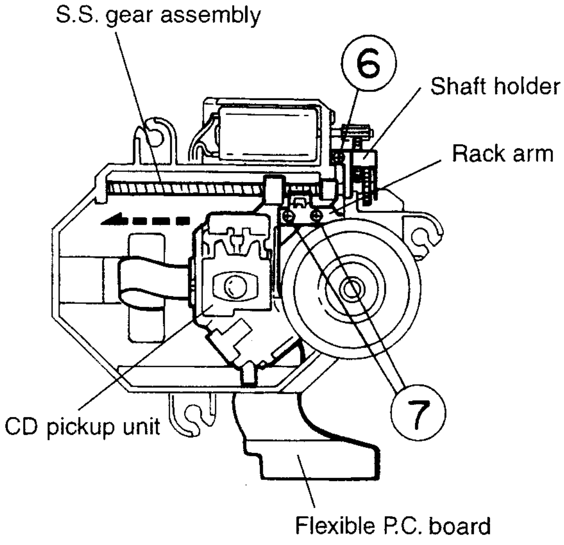

S.S. gear assembly
6
Shaft holder
Rack arm
CD pickup unit
7
Flexible P.C. board

Fig. 22

Procedures for Reassembling the CD Pickup Unit

In principle, the CD pickup unit should be reassembled according to the opposite steps of removing the unit.
Caution: When mounting the rack arm, the round head screws should be tightened at first.

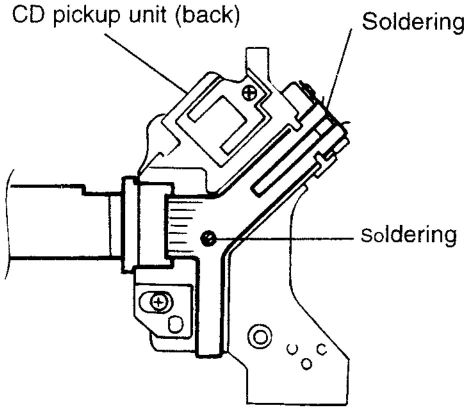

CD pickup unit (back)
Soldering
Soldering

Fig. 23

Removing the feed motor assembly

1. Remove the top cover.
2. Remove the clamper.
3. Remove the CD mechanism.
4. Remove the one screw 8 retaining the feed motor assebly.

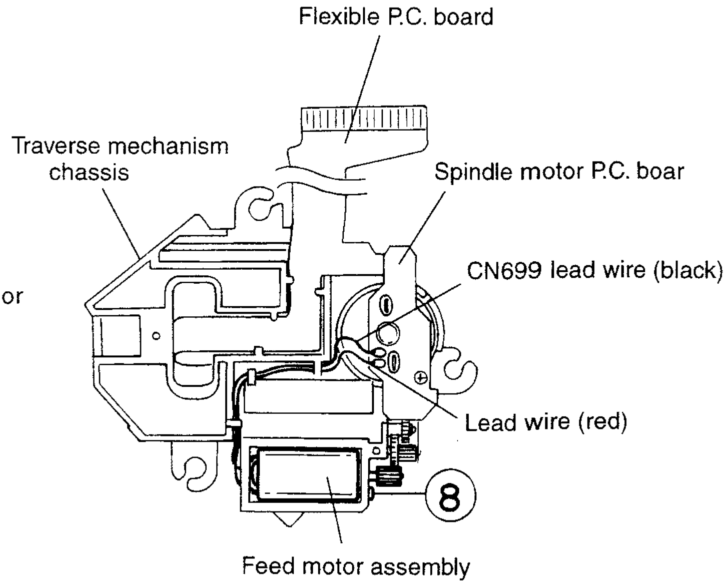

Flexible P.C. board
Traverse mechanism chassis
Spindle motor P.C. boar
CN699 lead wire (black)
Lead wire (red)
8
Feed motor assembly

Fig. 24

5. After turning over the CD mechanism, remove this mechanism from the lead wire treating groove of the feed motor assembly.
6. Remove the soldered positions of the lead wires (red and black) from the spindle motor P.C. board.

■ Removing the traverse mechanism chassis assembly

1. Remove the top cover.
2. Remove the clamper
3. Remove the CD mechanism.
4. Remove the CD pickup unit.
5. Pull the middle gear.
6. Dismount the feed motor.
7. After turning over the CD mechanism, remove the two soldered portions C on the spindle motor P.C. board.
8. From the connector CN699 on the spindle motor P.C. board, remove the flexible P.C. board and separate it from the traverse mechanism chassis assembly.
9. The spindle motor and turntable will not be supplied individually for changing the parts. Therefore, change the spindle motor and turntable in the form of the traverse mechanism chassis assembly (combination of spindle motor, turntable and mechanism chassis).

CAUTION: Since the LOCK-TIGHT 460 is used at thpress-fit section of turntable and spindle motor shaft , the spindle motor will sometimes be broken when the shaft has been dismounted carelessly.

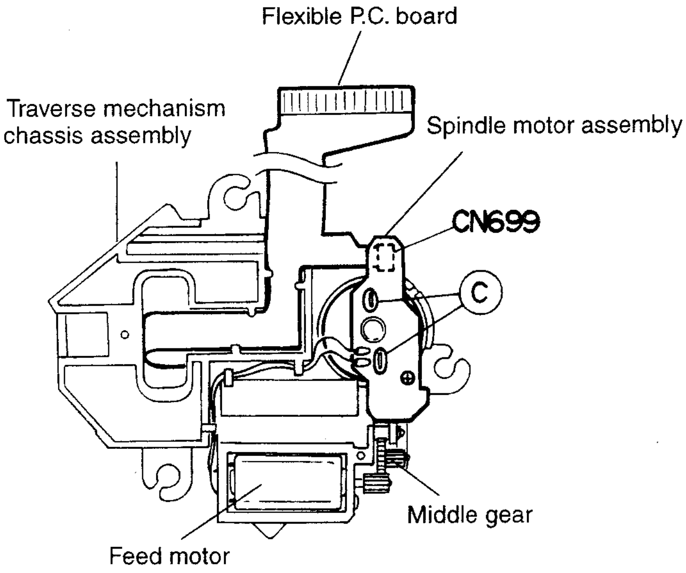


Fig. 25

■ Removing the actuator unit

1. Remove the top cover.
2. Dismount the tray guide (R) together with the CD tray.
3. Remove the four screws 9 retaining the actuator unit.
4. Remove the two screws 10 retaining the tray & cam drive motor.

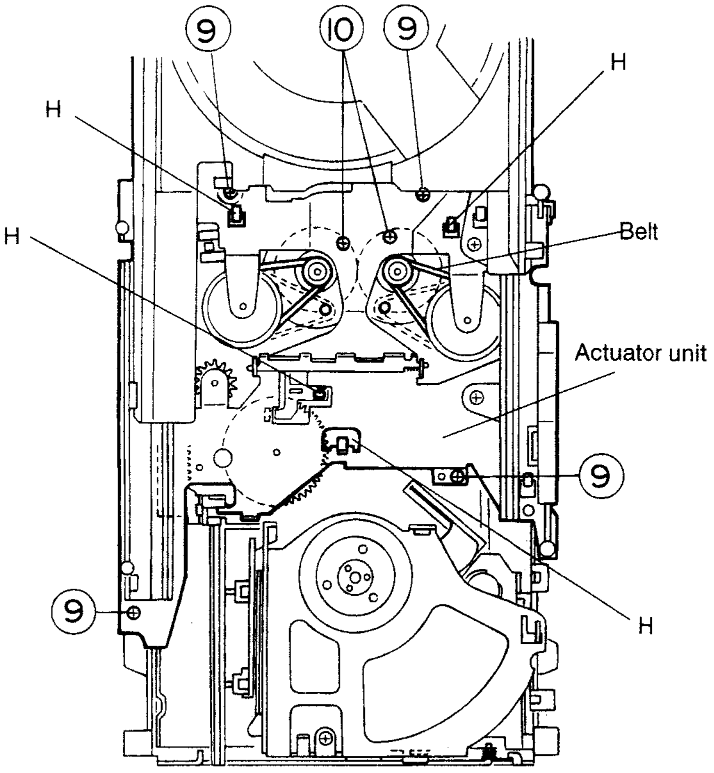


Fig. 26

Maintenance of CD Pickup

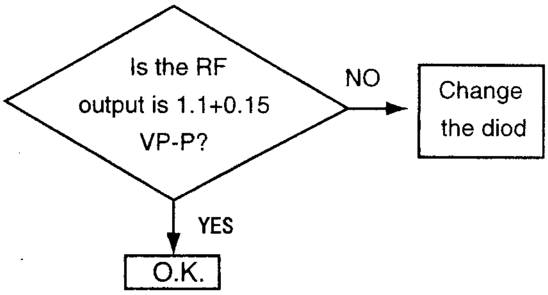
(1) Cleaning of pickup lens

1. Prior to changing any pickup lens,be sure to clean the pickup lens.
2. For cleaning the pickup lens, use the following cotton swab immerse in alcohol: Product No. JCB-B4 Manufacturer: Nippon Cotton Web

(2) Check of the service life of laserdiode When

the service life of laserdiode has been exhausted, the following symptoms will appear:

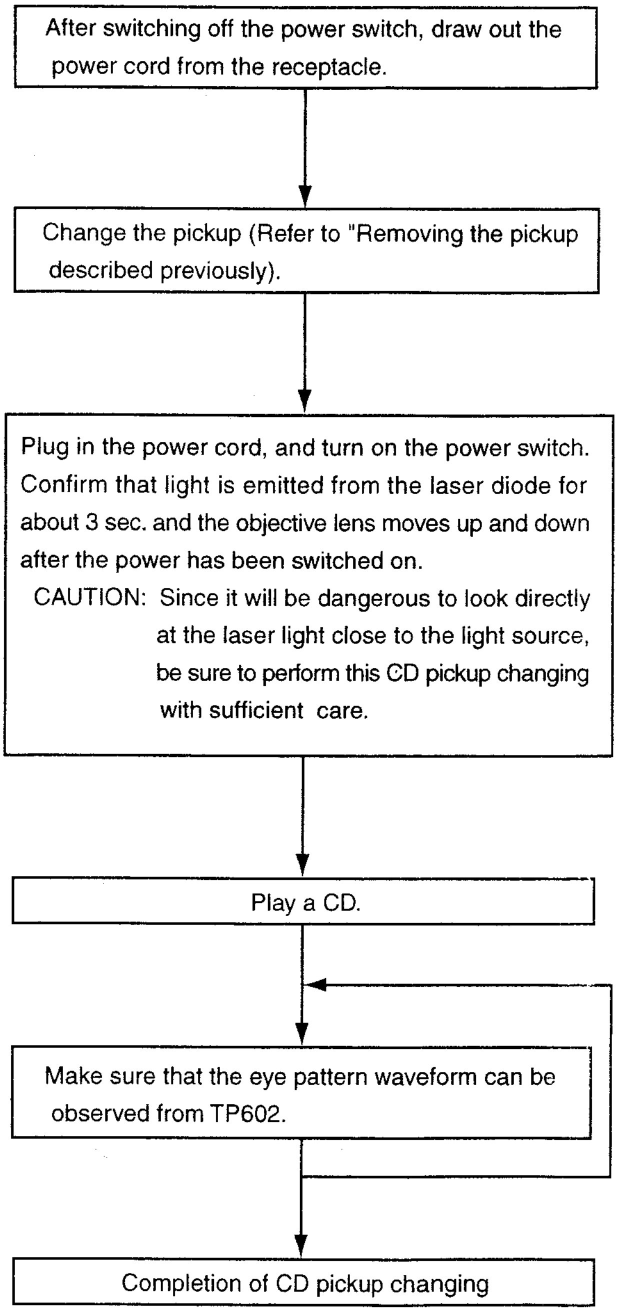
1. The RF output from TP602 (EFM outputand eye pattern amplitude) will be decreased.
2. The drive current necessary for light emission from the laser diode will be increased.Therefore, check the service life of the laser diode according to the following flow chart:



(3) Semi-fixed resistor on the APC P.C. board

The semi-fixed resistors attached to the pickup on the APC P.C. board is designed for adjusting the laser power.Since these resistors should be adjusted in a pair according to the characteristics of the laser block, be sure not to touch on any of the resistors. If the laser power is too low,the service life of the laser diode will be exhausted.In such a case, change the pickup.
Should any normal semi-fixed resistor of pickup be turned, the pickup can possibly bebroken due to overcurrent.Therefore, be sure not to turn such a semi-fixed resistor.

Procedures for Changing the CD Pickup



After switching off the power switch, draw out the power cord from the receptacle.

Change the pickup (Refer to "Removing the pickup described previously).

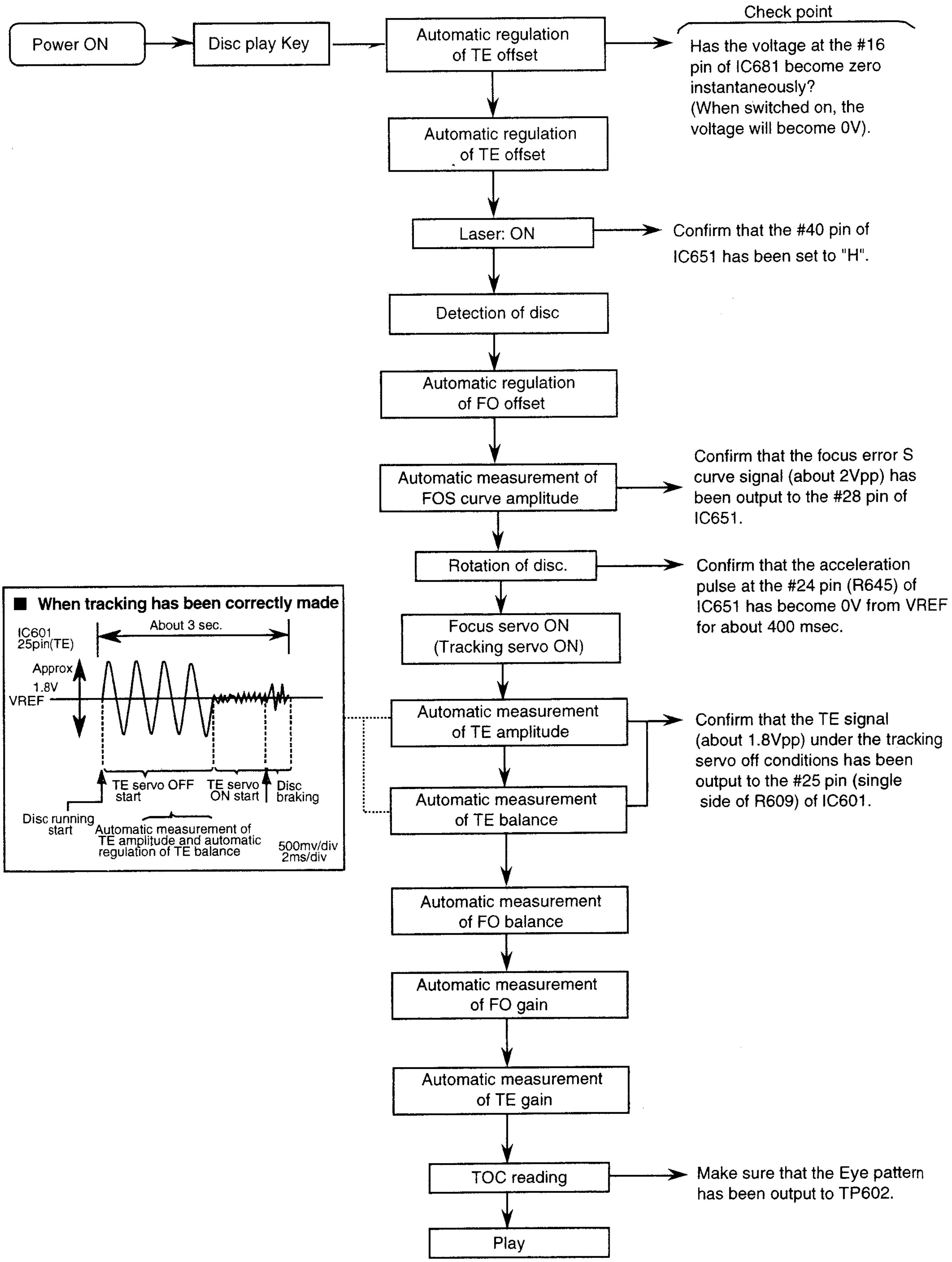
Plug in the power cord, and turn on the power switch. Confirm that light is emitted from the laser diode for about 3 sec. and the objective lens moves up and down after the power has been switched on.
CAUTION: Since it will be dangerous to look directly at the laser light close to the light source, be sure to perform this CD pickup changing with sufficient care.

Play a CD.

Make sure that the eye pattern waveform can be observed from TP602.

Completion of CD pickup changing

General Flow until Reading TOC


Power ON
Disc play Key
Automatic regulation of TE offset
Automatic regulation of TE offset
Laser: ON
Detection of disc
Automatic regulation of FO offset
Automatic measurement of FOS curve amplitude
Rotation of disc.
Focus servo ON (Tracking servo ON)
Automatic measurement of TE amplitude
Automatic measurement of TE balance
Automatic measurement of FO balance
Automatic measurement of FO gain
Automatic measurement of TE gain
TOC reading
Play
IC601 25pin(TE)
About 3 sec.
Approx 1.8V
VREF
TE servo OFF start
TE servo ON start
Disc braking
Disc running start
Automatic measurement of TE amplitude and automatic regulation of TE balance
500mv/div
2ms/div

■ When tracking has been correctly made

Check point

Has the voltage at the #16 pin of IC681 become zero instantaneously? (When switched on, the voltage will become 0V).

Confirm that the #40 pin of IC651 has been set to "H".

Confirm that the focus error S curve signal (about 2Vpp) has been output to the #28 pin of IC651.

Confirm that the acceleration pulse at the #24 pin (R645) of IC651 has become 0V from VREF for about 400 msec.

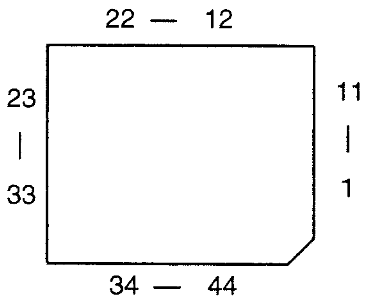
Confirm that the TE signal (about 1.8Vpp) under the tracking servo off conditions has been output to the #25 pin (single side of R609) of IC601.

Make sure that the Eye pattern has been output to TP602.

Description of Main ICs

■ MN150837JBR2 (IC681) Changer controller

1.Terminal Layout



2.Description

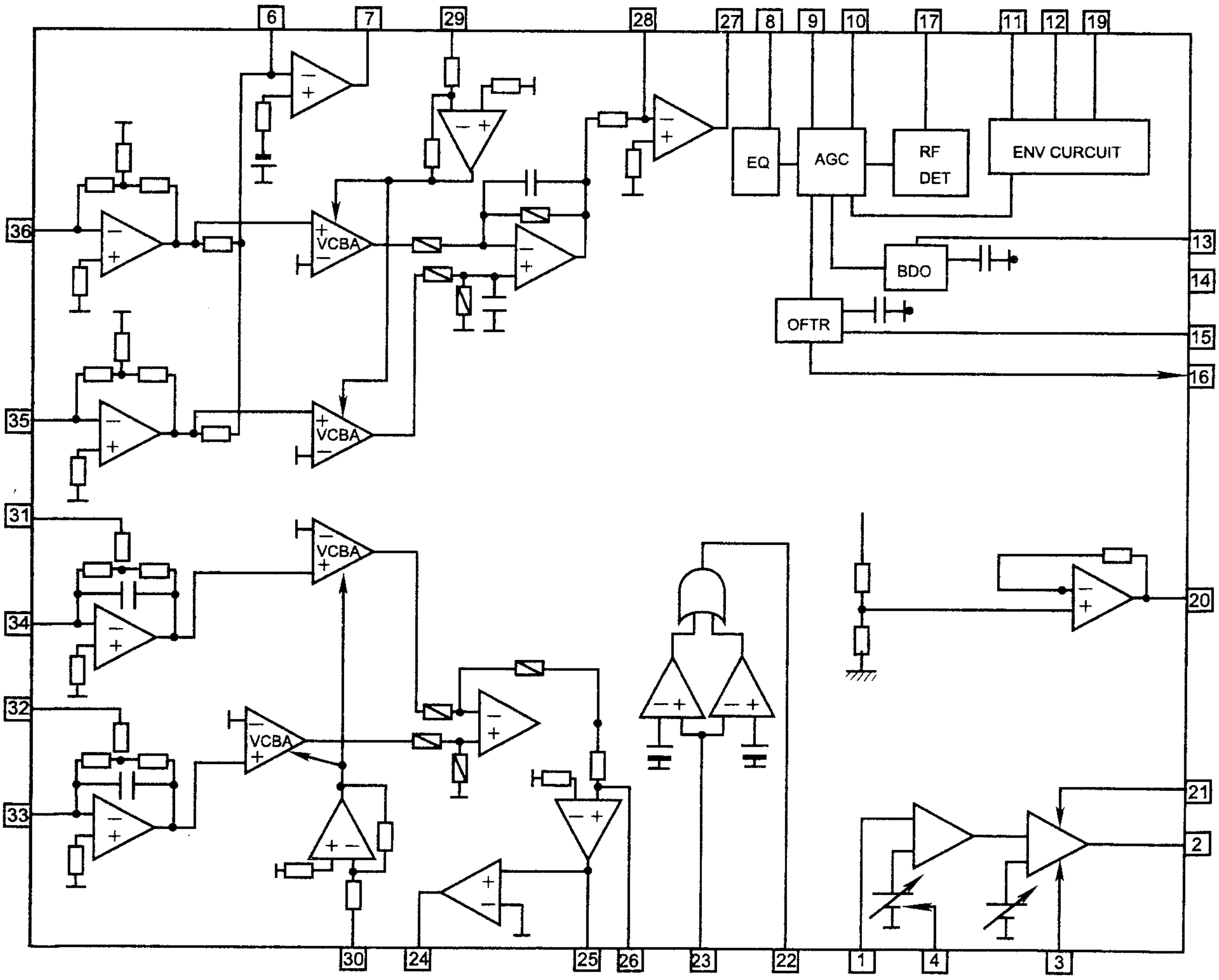
Pin No.	Symbol	I/O	Description	Pin No.	Symbol	I/O	Description
1	/RESET	I	Reset signal input	23	ST	I	Storobe signal input
2	NC	-	Non connection	24	DATA	I/O	Control/Status data I/
3	WATCH5V	O	+5V	25	CK	O	Clock signal output
4	OPEN	I	/Door open switch detect	26	STATS	I	STATS signal input
5	CLOSE	I	/Door close switch detect	27	/TLOCK	I	TLOCK signal input
6	PHOTOSW	I	/Photo switch detect	28	/FLOCK	I	FLOCK signal input
7	NC	-	Non connection	29	SENSE	I	SENSE signal input
8	TRAY+	O	Tray motor drive + signal output	30	NC	-	NC
9	TRAY-	O	Tray motor drive - signal output	31	SQCK	O	Lock signal for sub-code Q resister
10	CAM+	O	Cam motor drive + signal output	32	MLD	O	Micon command load signal output
11	CAM-	O	Cam motor drive - signal output	33	MDATA	O	Micon command data output
12	SUBQ	I	Sub-code Q-data output	34	MCLK	O	Micon command clock signal input
13	NC	-	Non connection	35	/RST	-	Reset signal output (L:reset)
14	/INTALSW	I	Initial switch detect	36	NC	-	Non connection
15	/SUBSW	I	Sub tray switch detect	37	NC	I	Non connection
16	/RESETSW	I	Rest switch detect	38	/DRIVERMUTE	O	BTL driver mute signal output
17	NC	-	Non connection	39	Vss	-	Connected to GND
18	NC	-	Non connection	40	OSC2	I/O	Oscillation terminal
19	NC	-	Non connection	41	OSC1	I/O	Oscillation terminal
20	NC	-	Non connection	42	VDD	-	Power supply
21	REQ	O	Output the "CD micon data request"	43	X1	-	Connected to GND
22	BLKCK	I	Subcode/block/clock signal input	44	X0	-	Non connection

■ AN8806SB(IC601):RF&Servo AMP

1.Treminal Layout

PD	1	36	PDAC
LD	2	35	PDBD
LDON	3	34	PDF
LDP	4	33	PDE
VCC	5	32	PDER
RF-	6	31	PDFR
RF OUT	7	30	TBAL
RF IN	8	29	FBAL
C.AGC	9	28	EF-
ARF	10	27	EF OUT
C.ENV	11	26	TE-
C.EA	12	25	TE OUT
CS BDO	13	24	CROSS
BDO	14	23	TE BPF
CS BRT	15	22	VDET
OFTR	16	21	LD OFF
/NRFDET	17	20	VREF
GND	18	19	ENV

2.Block Diagram

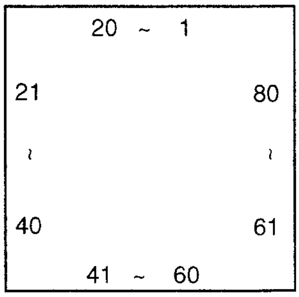

6
7
29
28
27
8
9
10
17
11
12
19
EQ
AGC
RF DET
ENV CURCUIT
BDO
OFTR
VCBA
VCBA
VCBA
VCBA
36
35
31
34
32
33
13
14
15
16
20
21
2
30
24
25
26
23
22
1
4
3

3. Functions

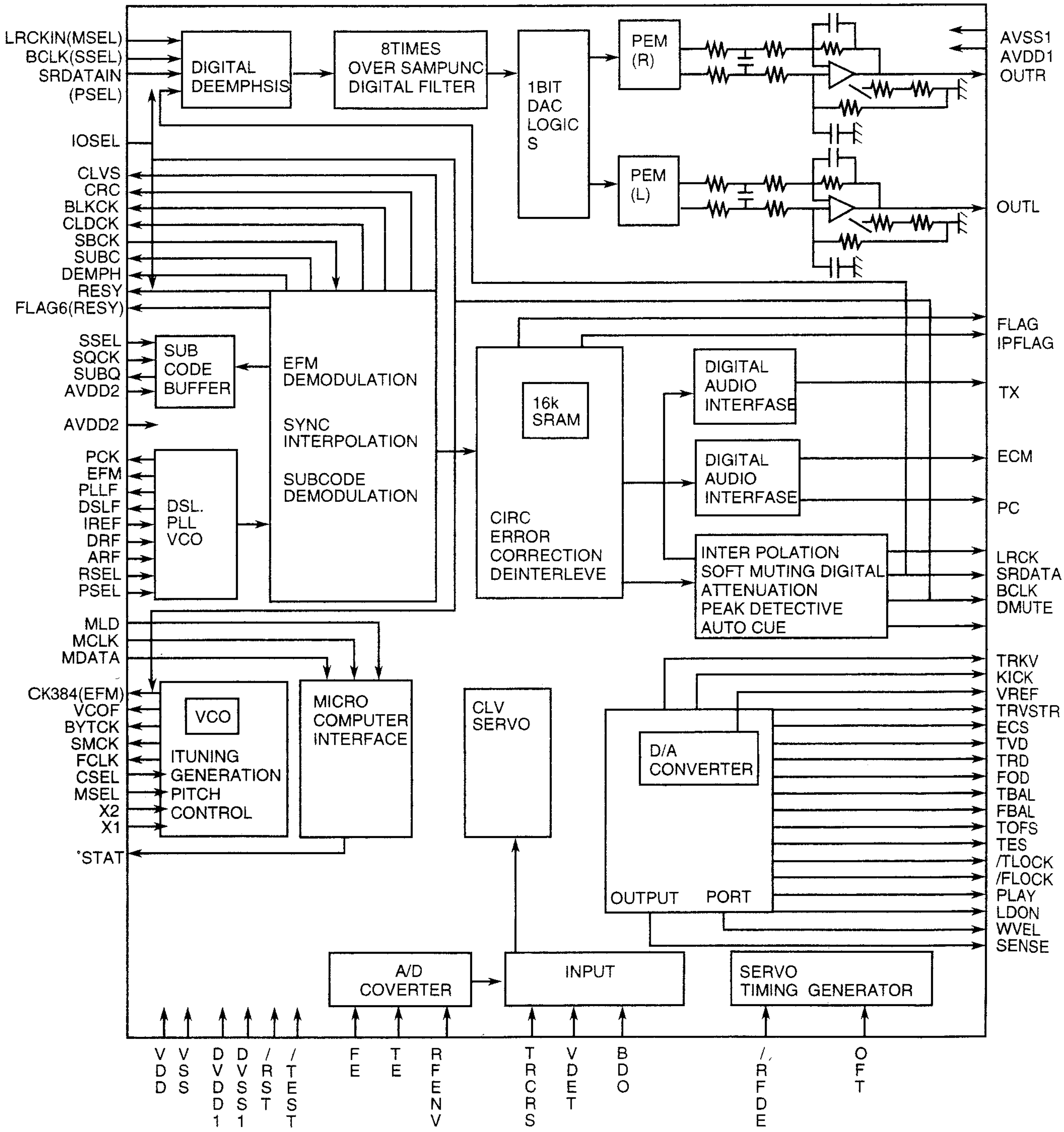
Pin No.	Symbol	I/O	Functions and operations
1	PD	I	APC amp input terminal
2	LD	O	APC amp output terminal
3	LD ON	I	APC ON/OFF control terminal
4	LDP	--	Connect to ground
5	VCC	--	Power supply
6	RF-	I	Inverse input pin for RF amp
7	RF OUT	O	RFamp output
8	RF IN	I	RF input
9	C.AGC	I/O	Connecting pin of AGC loop filter
10	ARF	O	RF output
11	C.ENV	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
12	C.EA	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
13	CS BDO	I/O	A capacitor is connected to detect the lower envelope of RF signal
14	BDO	O	BDO output pin
15	CS BRT	I/O	A capacitor is connected to detect the lower envelope of RF signal
16	OFTR	O	Of-track status signal output
17	/NRFDET	O	RF detection signal output
18	GND	--	Ground
19	ENV	O	Envelope output
20	VREF	O	Reference voltage output
21	LD OFF	--	Connect to ground
22	VDET	O	Vibration detection signal output
23	TE BPF	I	Input pin of tracking error through BPF
24	CROSS	O	Tracking error cross output
25	TE OUT	O	Tracking error signal output
26	TE-	I	Inverse input pin for tracking error amp
27	FE OUT	O	Output pin of focus error
28	FE-	I	Inverse input pin for focus error amp
29	FBAL	I	Focus balance control
30	TBAL	I	Tracking balance control
31	PDFR	I/O	F I-V amp gain control
32	PDER	I/O	E I-V amp gain control
33	PDF	I	I-V amp input
34	PDE	I	I-V amp input
35	PD BD	I	I-V amp input
36	PD AC	I	I-V amp input

■ MN35510(IC603):DIGITAL SERVO&DIGITAL SIGNAL PROCESSER

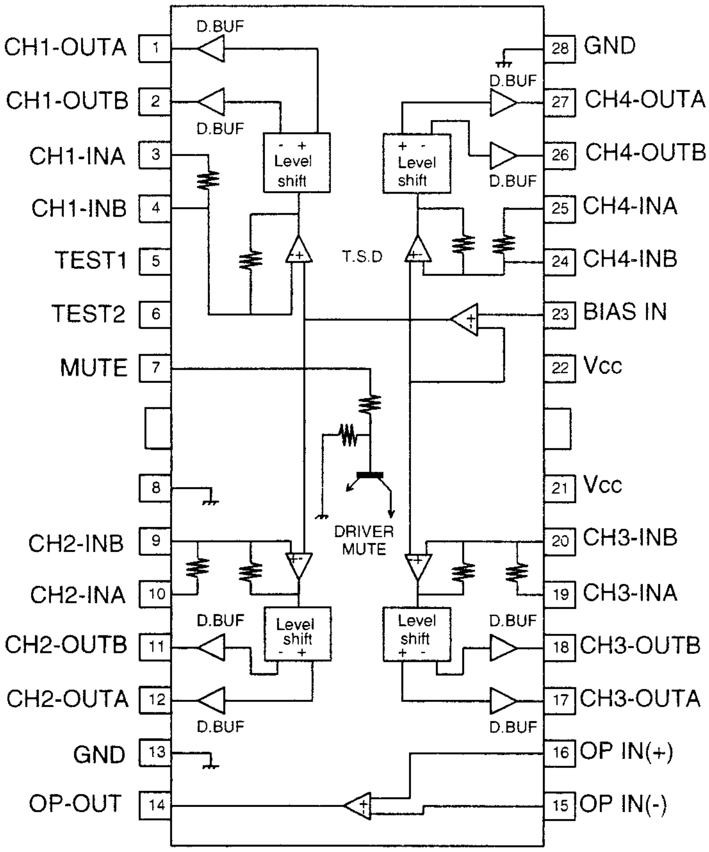
1. Terminal Layout


20 ~ 1
21
80
~
~
40
61
41 ~ 60

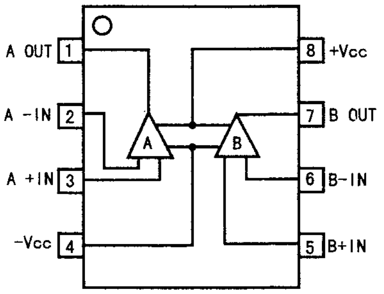
2.Block Diagram


LRCKIN(MSEL)
BCLK(SSEL)
SRDATAIN
(PSEL)
IOSEL
CLVS
CRC
BLKCK
CLDCK
SBCK
SUBC
DEMPH
RESY
FLAG6(RESY)
SSEL
SQCK
SUBQ
AVDD2
AVDD2
PCK
EFM
PLLF
DSLF
IREF
DRF
ARF
RSEL
PSEL
MLD
MCLK
MDATA
CK384(EFM)
VCOF
BYTCK
SMCK
FCLK
CSEL
MSEL
X2
X1
'STAT
DIGITAL DEEMPHSIS
8TIMES OVER SAMPUNC DIGITAL FILTER
1BIT DAC LOGICS
PEM (R)
PEM (L)
SUB CODE BUFFER
EFM DEMODULATION
SYNC INTERPOLATION
SUBCODE DEMODULATION
DSL. PLL VCO
16k SRAM
CIRC ERROR CORRECTION DEINTERLEVE
DIGITAL AUDIO INTERFASE
DIGITAL AUDIO INTERFASE
INTER POLATION SOFT MUTING DIGITAL ATTENUATION PEAK DETECTIVE AUTO CUE
VCO
ITUNING GENERATION PITCH CONTROL
MICRO COMPUTER INTERFACE
CLV SERVO
D/A CONVERTER
OUTPUT PORT
A/D COVERTER
INPUT
SERVO TIMING GENERATOR
AVSS1
AVDD1
OUTR
OUTL
FLAG
IPFLAG
TX
ECM
PC
LRCK
SRDATA
BCLK
DMUTE
TRKV
KICK
VREF
TRVSTR
ECS
TVD
TRD
FOD
TBAL
FBAL
TOFS
TES
/TLOCK
/FLOCK
PLAY
LDON
WVEL
SENSE
VDD
VSS
DVDD1
DVSS1
/RST
/TEST
FE
TE
RFENV
TRCRS
VDET
BDO
/RFDE
OFT

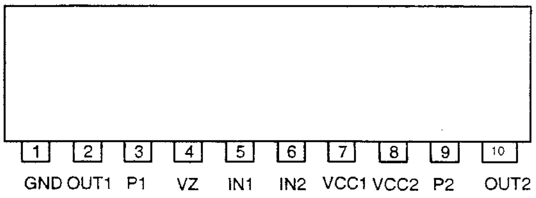
■ BA6897FP-W(IC602) 4channel driver


CH1-OUTA 1
CH1-OUTB 2
CH1-INA 3
CH1-INB 4
TEST1 5
TEST2 6
MUTE 7
8
CH2-INB 9
CH2-INA 10
CH2-OUTB 11
CH2-OUTA 12
GND 13
OP-OUT 14
28 GND
27 CH4-OUTA
26 CH4-OUTB
25 CH4-INA
24 CH4-INB
23 BIAS IN
22 Vcc
21 Vcc
20 CH3-INB
19 CH3-INA
18 CH3-OUTB
17 CH3-OUTA
16 OP IN(+)
15 OP IN(-)
D.BUF
Level shift
T.S.D
DRIVER MUTE

■ NJM5532D(IC702.IC301):Dual Op. Amp.


A OUT 1
A -IN 2
A +IN 3
-Vcc 4
8 +Vcc
7 B OUT
6 B-IN
5 B+IN
A
B

■ LB1641(IC501) DC Motor Driver


1 GND
2 OUT1
3 P1
4 VZ
5 IN1
6 IN2
7 VCC1
8 VCC2
9 P2
10 OUT2

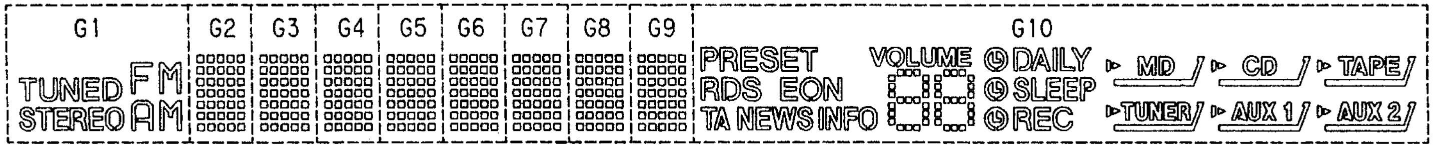
FUNCTION

Input		Output		Mode
IN1	IN2	OUT1	OUT2	
0	0	0	0	Brake
1	0	1	0	CLOCKWISE
0	1	0	1	COUNTER-CLOCKWISE
1	1	0	0	Brake

Description of FL indicator tube internals

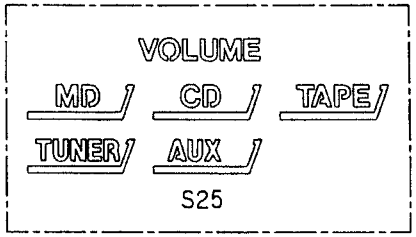
■ QLF0029-001

1. Splitting and internal connection of grid/segment

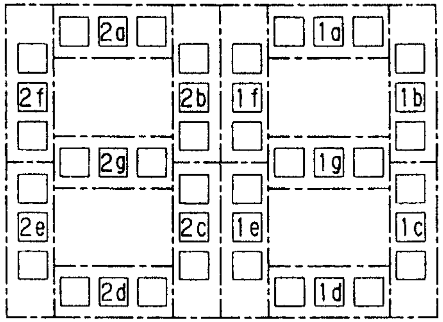

G1
G2
G3
G4
G5
G6
G7
G8
G9
G10
TUNED
STEREO
FM
AM
PRESET
RDS
EON
TA NEWS INFO
VOLUME
DAILY
SLEEP
REC
MD
CD
TAPE
TUNER
AUX 1
AUX 2

	G1	G2~G9	G10
S0		S0	AUX2/
S1		S1	(AUX) 1
S2		S2	▷(AUX2)
S3		S3	▷(AUX1)
S4		S4	▷(TUNER)
S5		S5	INFO
S6		S6	NEWS
S7		S7	TA
S8		S8	1d
S9		S9	1c
S10		S10	1e
S11		S11	1g
S12		S12	1b
S13		S13	1f
S14		S14	1a
S15		S15	EON
S16		S16	2d
S17		S17	2c

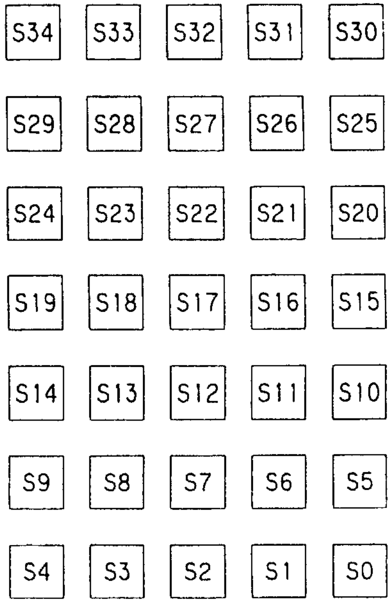
	G1	G2~G9	G10
S18		S18	2e
S19		S19	2g
S20		S20	2b
21		21	2f
S22		S22	2a
S23		S23	RDS
S24		S24	PRESET
S25		S25	S25
S26		S26	◷ (REC)
S27		S27	◷(SLEEP)
S28		S28	◷(DAILY)
S29		S29	REC
S30		S30	SLEEP
S31	AM	S31	DAILY
S32	STEREO	S32	▷(TAPE)
S33	FM	S33	▷ (CD)
S34	TUNED	S34	▷ (MD)


VOLUME
MD
CD
TAPE
TUNER
AUX
S25

G10


2a
1a
2f
2b
1f
1b
2g
1g
2e
2c
1e
1c
2d
1d

G10


S34
S33
S32
S31
S30
S29
S28
S27
S26
S25
S24
S23
S22
S21
S20
S19
S18
S17
S16
S15
S14
S13
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
S0

G2~G9

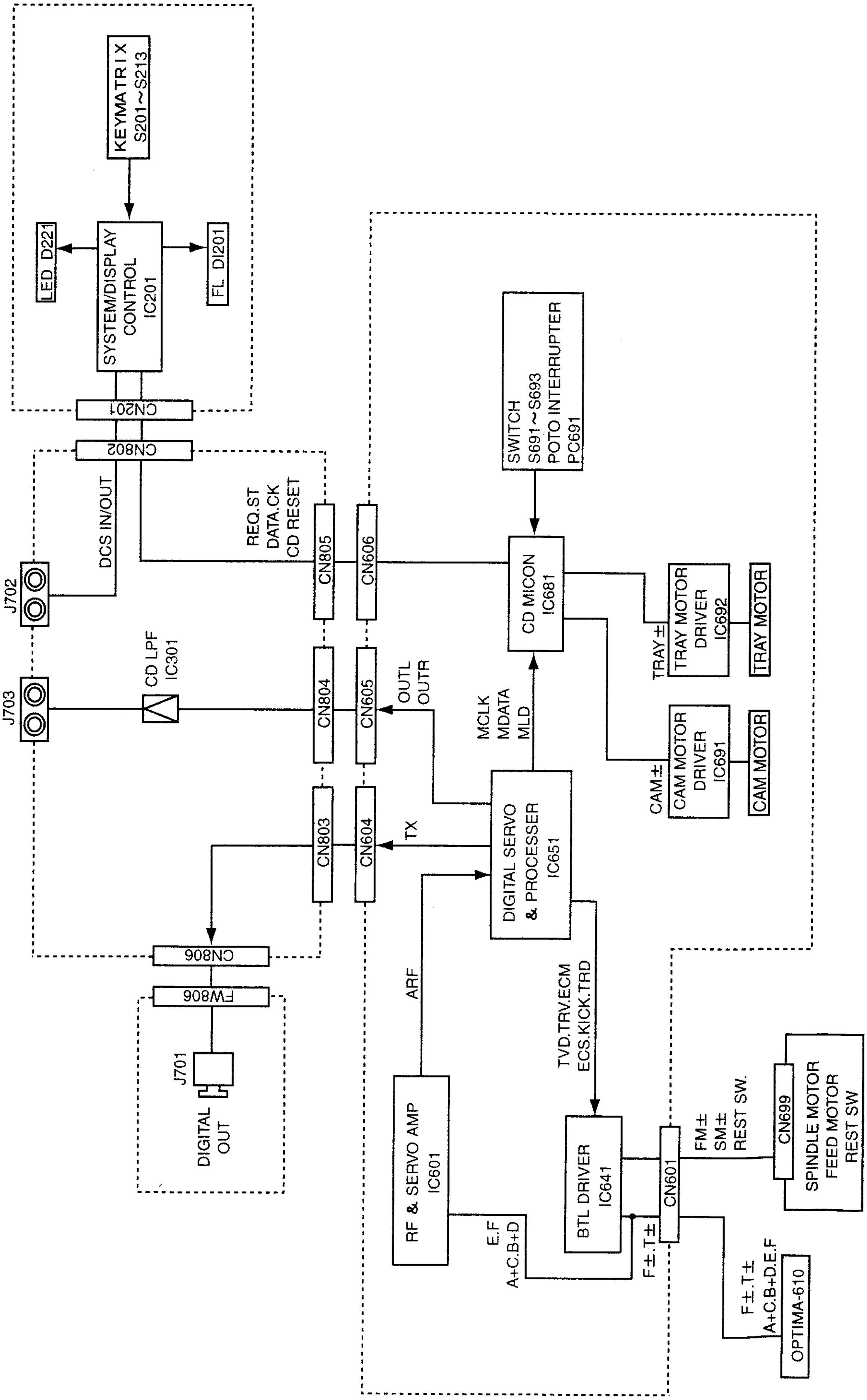
2. Terminal Connection

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Assignment	F1	F1	NL	D	S34	S33	S32	S31	S30	S29	S28	S27	S26	S25	S24	S23	S22	S21	S20	S19	S18	S17	S16	S15	S14	S13	S12

Pin No.	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Assignment	S11	S10	S9	S8	S7	S6	S5	S4	S3	S2	S1	S0	NL	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	H	NL	F2	F2

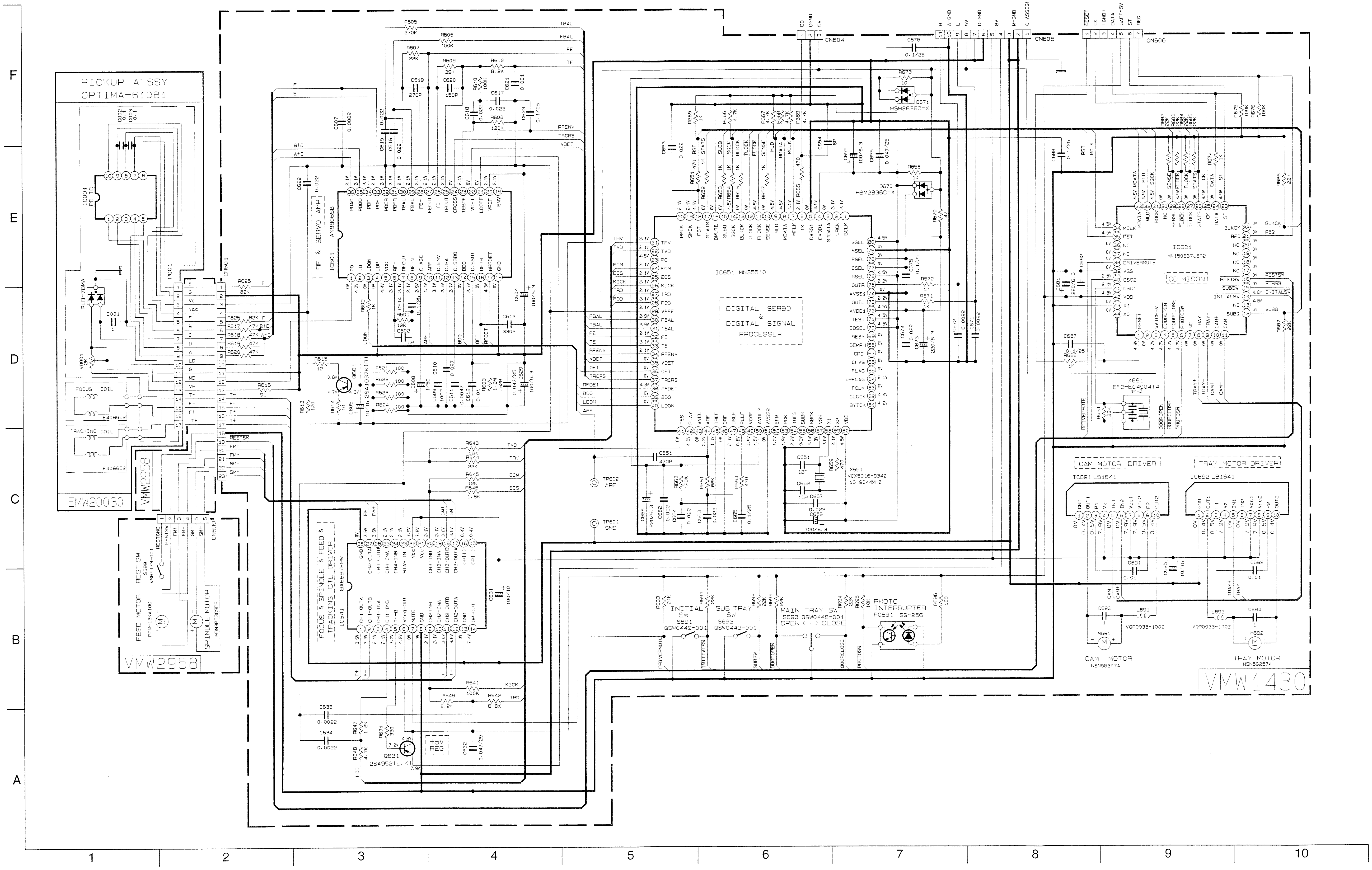
F1,F2:Filament G1~G10:Grid S0~S34:Anode D: Connect externally to F1 NL:No Lead
H: Normal current passing grid

■ Block Diagram

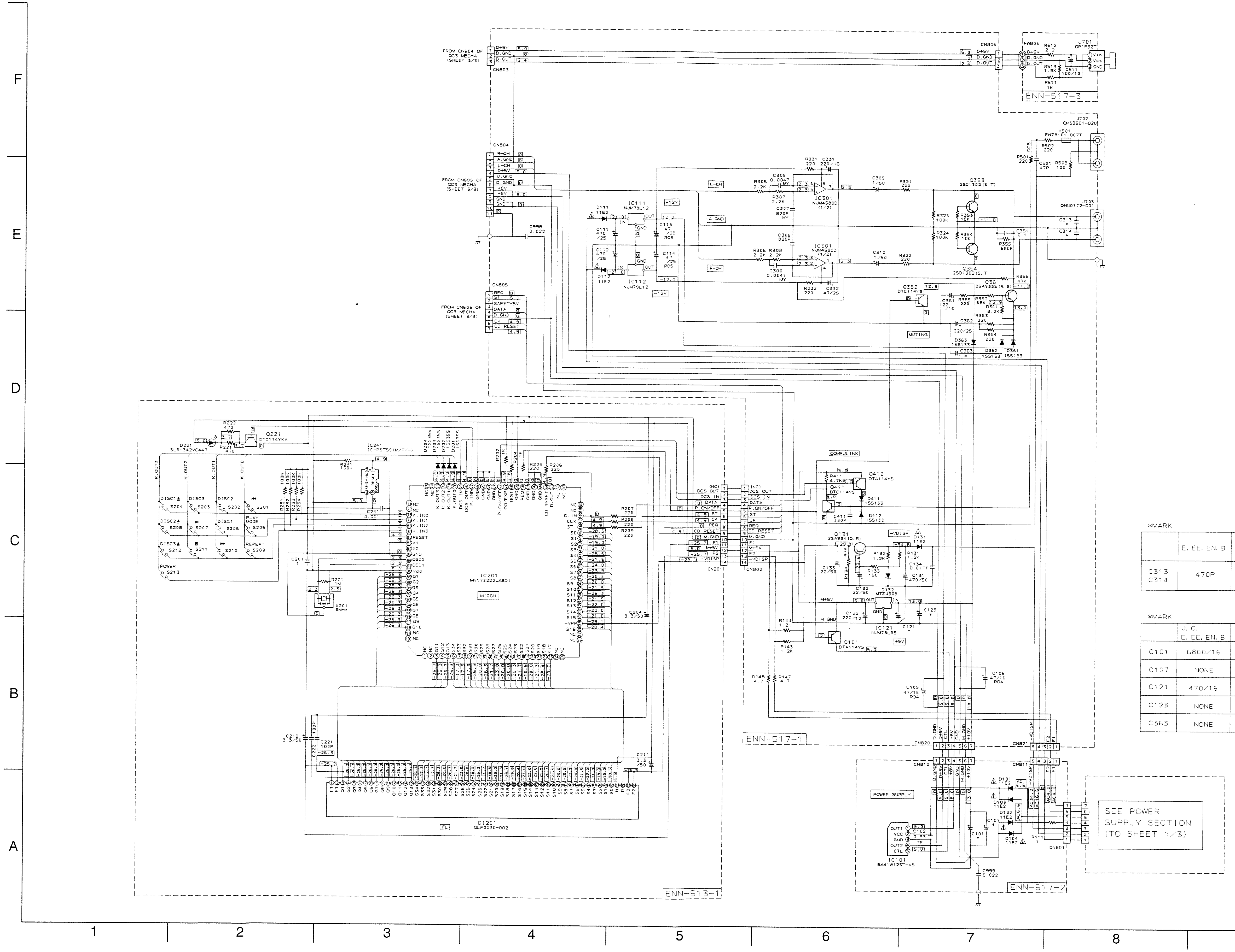

KEYMATRIX
S201~S213
SYSTEM/DISPLAY
CONTROL
IC201
LED D221
FL DI201
CN201
CN802
DCS IN/OUT
DCS
J702
ANALOG
AUDIO OUT
J703
CD LPF
IC301
REQ.ST
DATA.CK
CD RESET
CN805
CN606
CN804
CN605
OUTL
OUTR
CN803
CN604
TX
CN806
FW806
J701
DIGITAL
OUT
SWITCH
S691~S693
POTO INTERRUPTER
PC691
CD MICON
IC681
TRAY±
TRAY MOTOR
DRIVER
IC692
TRAY MOTOR
CAM±
CAM MOTOR
DRIVER
IC691
CAM MOTOR
MCLK
MDATA
MLD
DIGITAL SERVO
& PROCESSER
IC651
ARF
TVD.TRV.ECM
ECS.KICK.TRD
RF & SERVO AMP
IC601
E.F
A+C.B+D
BTL DRIVER
IC641
F±.T±
CN601
FM±
SM±
REST SW.
CN699
SPINDLE MOTOR
FEED MOTOR
REST SW
F±.T±
A+C.B+D.E.F
OPTIMA-610

Standard Schematic Diagrams

[XL-EX70] CD Section


PICKUP A'SSY
OPTIMA-610B1
IC001
PD-IC
LD001
RLD-78MA
FOCUS COIL
TRACKING COIL
E408652
EMW20030
VMW2958
CN501
FEED MOTOR
PPN-13KA10C
SPINDLE MOTOR
MDN3BT3CSDS
REST SW
S690
VSH1173-001
CN699
IC501
AN8806SB
RF & SERVO AMP
Q601
2SA1037K(R)
IC641
BA6897FP-W
FOCUS & SPINDLE & FEED & TRACKING BTL DRIVER
Q631
2SA952(L,K)
+5V REG
IC651 MN35510
DIGITAL SERBO & DIGITAL SIGNAL PROCESSER
X651
VCX5016-934Z
16.9344MHz
TP602
ARF
TP601
GND
CN604
CN605
CN606
D571
HSM2836C-X
D670
HSM2836C-X
IC681
MN15083TJBR2
CD MICON
X681
EFO-EC4004T4
4MHz
CAM MOTOR DRIVER
IC691 LB1641
TRAY MOTOR DRIVER
IC692 LB1641
INITIAL SW
S691
SUB TRAY SW
S692
QSW0449-001
MAIN TRAY SW
S693 QSW0448-001
OPEN ⟷ CLOSE
PHOTO INTERRUPTER
PC691 SG-256
L691
VQP0033-100Z
L692
VQP0033-100Z
M691
CAM MOTOR
NSN5G257A
M692
TRAY MOTOR
NSN5G257A
VMW1430
A
B
C
D
E
F
1
2
3
4
5
6
7
8
9
10

[XL-EX70] System Control


F
E
D
C
B
A
1
2
3
4
5
6
7
8
FROM CN604 OF GC3 MECHA (SHEET 3/3)
FROM CN605 OF GC3 MECHA (SHEET 3/3)
FROM CN606 OF GC3 MECHA (SHEET 3/3)
CN603
CN804
CN805
CN806
J701 GP1F32T
J702 QMS3501-020
J703 QNN0172-001
IC111 NJM78L12
IC112 NJM79L12
IC301 NJM4580D
Q353 2SD1302(S,T)
Q354 2SD1302(S,T)
Q361 2SA933S(R,S)
Q362 DTC114YS
MUTING
COMPULINK
Q411 DTC114YS
Q412 DTA114YS
Q131 2SA934(Q,R)
D132 MTZJ3GB
IC121 NJM78L05
Q101 DTA114YS
IC241 IC-PST551M/F/-X
Q221 DTC114YKA
D221 SLR-342VCA47
IC201 MN173222JA8D1
MICON
X201 8MHz
D1201 QLF0030-002
FL
CN201
CN802
CN820
CN821
CN810
CN811
CN801
IC101 BA41W12ST-V5
POWER SUPPLY
SEE POWER SUPPLY SECTION (TO SHEET 1/3)
ENN-517-3
ENN-517-1
ENN-517-2
ENN-513-1

*MARK

	E, EE, EN, B	J, C UF, U, UB US, UT
C313 C314	470P	NONE

*MARK

	J, C, E, EE, EN, B	UF, U, UB, US, UT
C101	6800/16	6800/25
C107	NONE	220/25
C121	470/16	1000/25
C123	NONE	1000/25
C363	NONE	1000/25

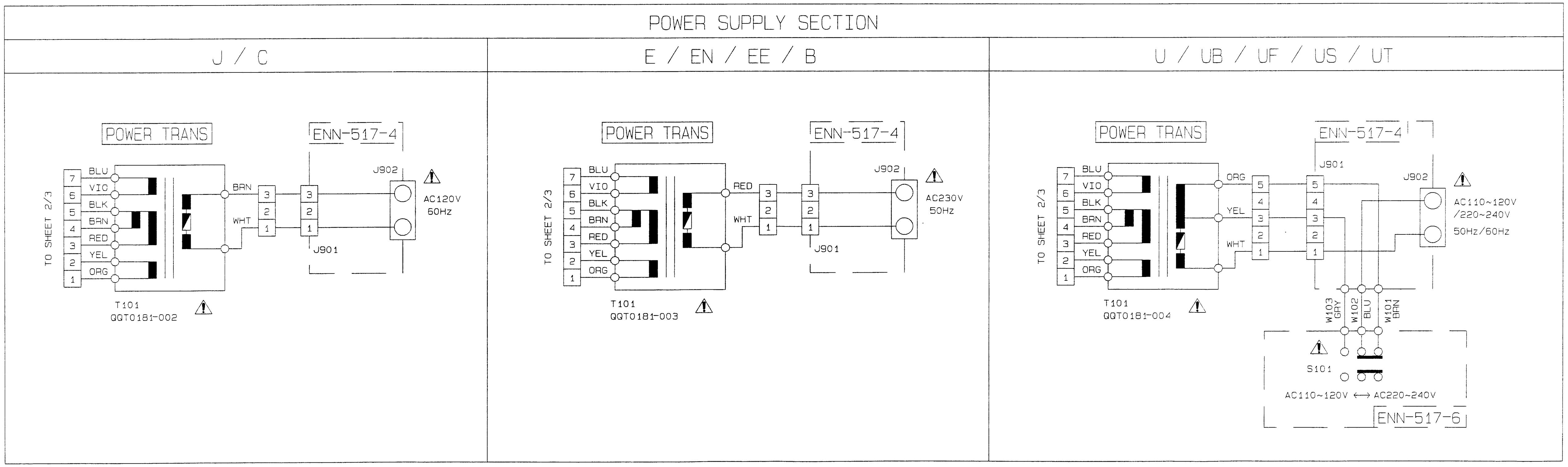
[XL-EX70] Power Supply

EXPLANATION OF OVERALL OF SCHEMA
MODEL XL-EX70/XL-EX90

SHEET NUMBER	CIRCUITS DESCRIPTION
1/3	PRIMARY WITH MAINS TRANSFORMER.
2/3	DC REGULATORS. AUDIO OUTPUT/EXTERNAL SIGNAL INPUT. SYSTEM CONTROL LSI. FL DISPLAY.
3/3	SYSTEM CONTROL LSI FOR CD MECHA. DIGITAL SIGNAL PROCESSOR.

VERSION CODES

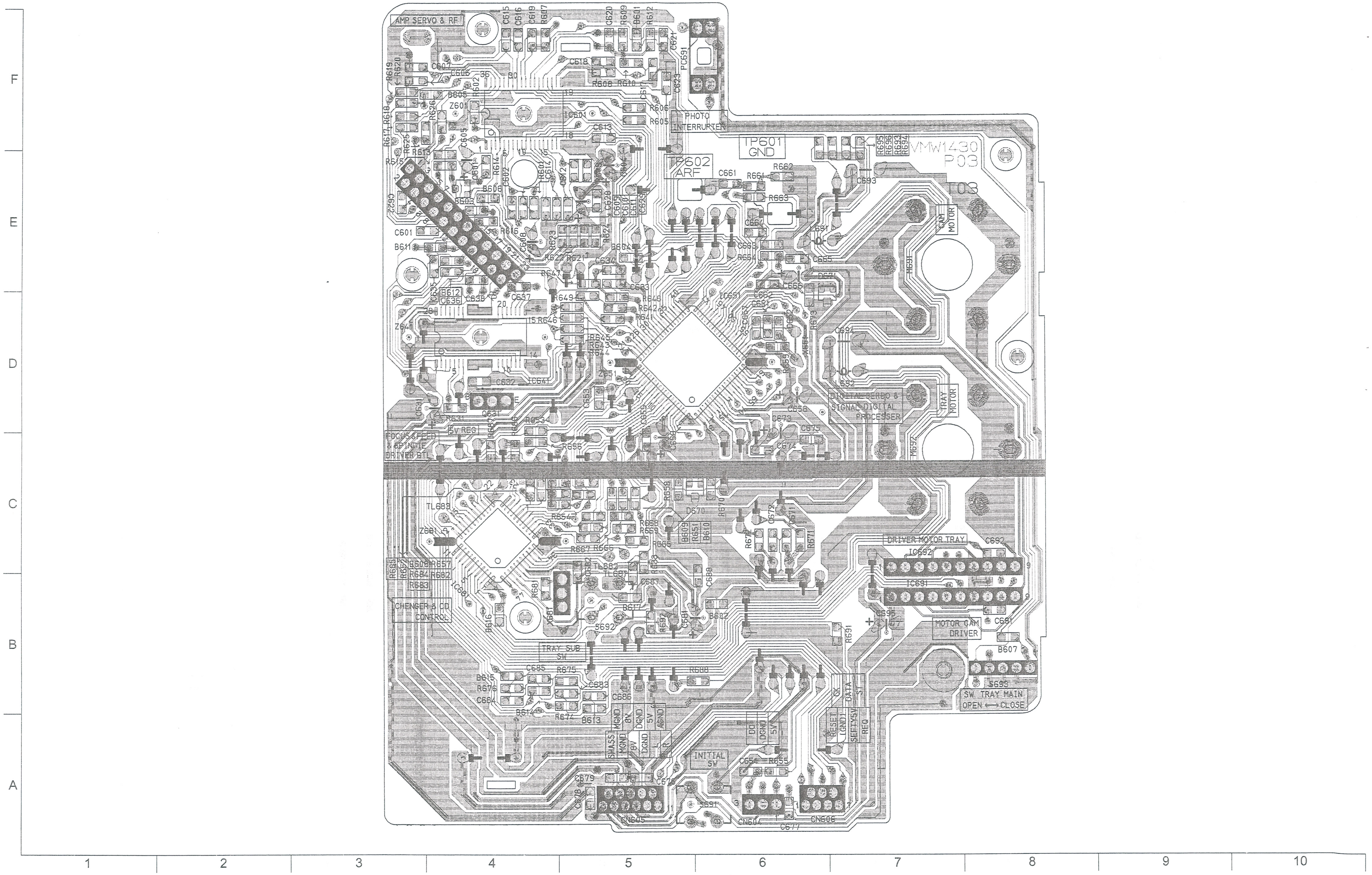
J : U. S. A.
C : CANADA
E : CONTINENTAL EUROPE
EN : NORDIC COUNTRIES
EE : EASTERN EUROPE
B : U. K.
UB : HONGKONG
UF : CHINA
US : SINGAPORE
UT : TAIWAN
U : UNIVERSAL EXPECT ALL OF ABOVES


POWER SUPPLY SECTION
J / C
E / EN / EE / B
U / UB / UF / US / UT
POWER TRANS
ENN-517-4
TO SHEET 2/3
BLU
VIO
BLK
BRN
RED
YEL
ORG
7
6
5
4
3
2
1
BRN
WHT
RED
ORG
J902
J901
AC120V
60Hz
AC230V
50Hz
AC110~120V
/220~240V
50Hz/60Hz
T101
QQT0181-002
QQT0181-003
QQT0181-004
W103
GRY
W102
BLU
W101
BRN
S101
AC110~120V ⟷ AC220~240V
ENN-517-6

NOTE:
MARK(*) IS TO SHOW DEVIATION IN VERSION.
DETAILS ARE EXPLAINED NEAR THE MARK.

Location of P.C. Board Parts

[XL-EX70] CD Section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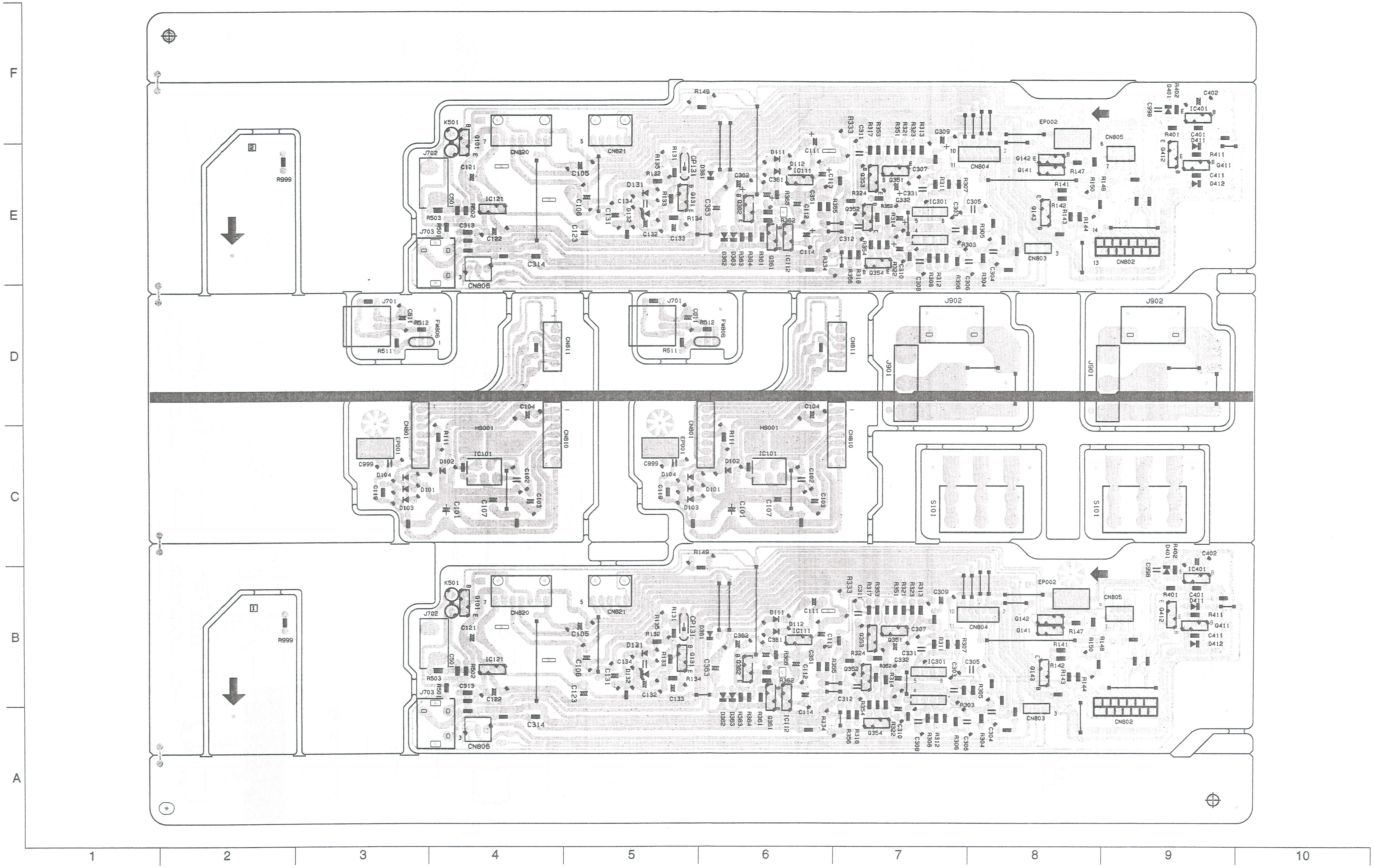
AMP SERVO & RF
PHOTO INTERRUPTER
TP601 GND
TP602 ARF
VMW1430 P03
CAM MOTOR
TRAY MOTOR
DIGITAL SERVO & SIGNAL DIGITAL PROCESSER
5V REG
IC651
IC641
IC601
DRIVER MOTOR TRAY
IC692
IC691
MOTOR CAM DRIVER
CHENGER & CD CONTROL
TRAY SUB SW
SW TRAY MAIN OPEN ⟷ CLOSE
INITIAL SW
CN605
CN607
CN606

[XL-EX70] Audio & Power Suply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K501
Q101
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J703
J701
CN820
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CN806
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CN803
CN801
CN810
CN811
EP001
EP002
IC101
IC111
IC112
IC121
IC301
IC401
HS001
CP131
R999
R149
R131
R132
R133
R134
R135
R141
R142
R143
R144
R147
R148
R150
R111
R303
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R402
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R501
R502
R503
R511
R512
C101
C102
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C511
C998
C999
D101
D102
D103
D104
D111
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D131
D132
D361
D362
D363
D401
D411
D412
Q131
Q141
Q142
Q143
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Q411
Q412
FW806
J901
J902
S101
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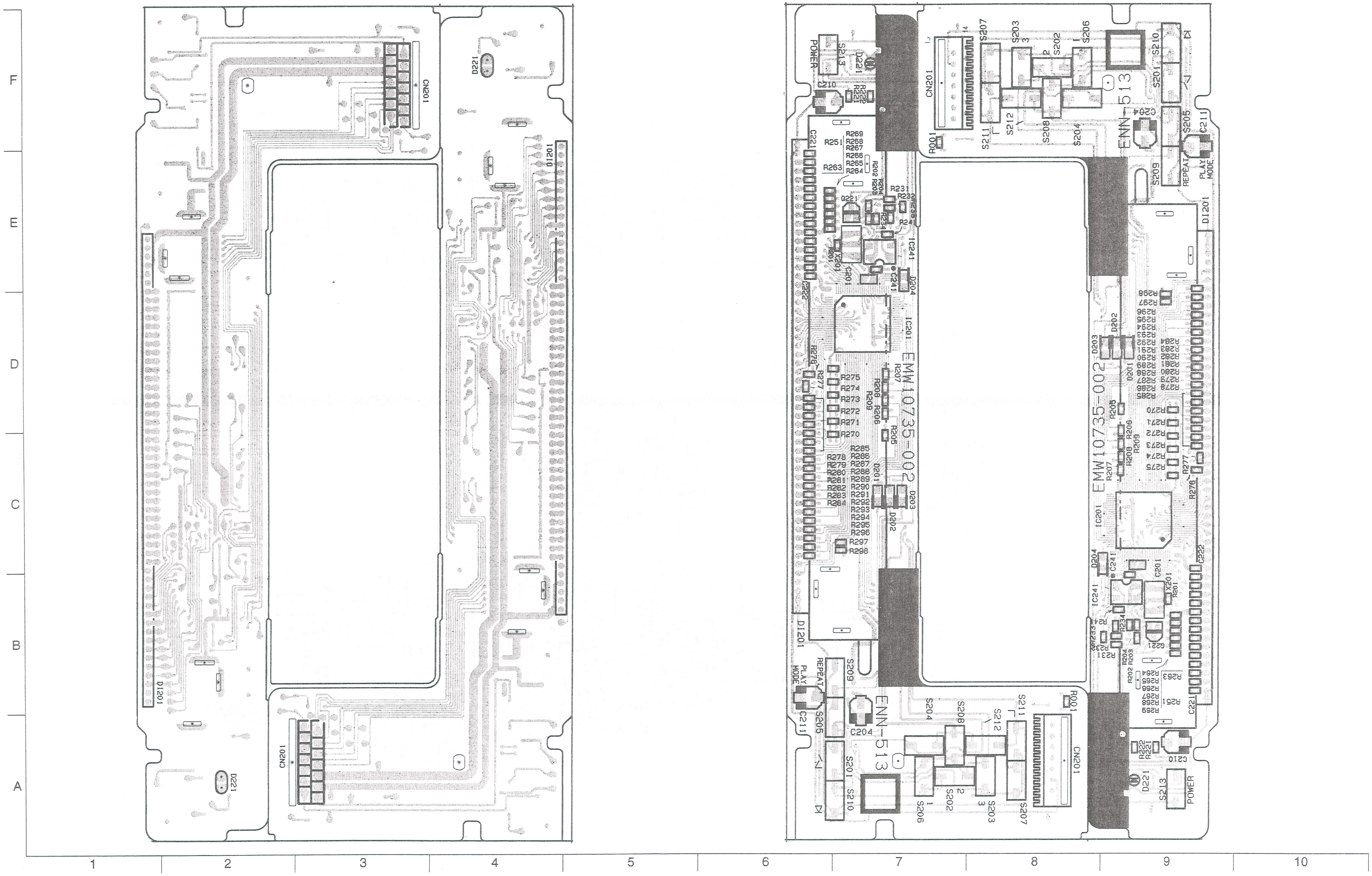
FL Ststem Control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CN201
D221
DI201
POWER
S213
C210
R222
R221
R001
S207
S203
S202
S206
S210
S201
S211
S212
S208
S204
C204
S205
C211
S209
REPEAT
PLAY MODE
ENN-513
EMW10735-002
C221
R251
R269
R268
R267
R266
R265
R264
R263
R202
R203
R204
R231
R232
R233
R234
R241
Q221
X201
R201
C201
C241
IC241
D204
IC201
C222
R276
R277
R275
R274
R273
R272
R271
R270
R207
R208
R209
R206
R205
R278
R279
R280
R281
R282
R283
R284
R285
R286
R287
R288
R289
R290
R291
R292
R293
R294
R295
R296
R297
R298
D201
D202
D203

PARTS LIST

[XL-EX70]

1. Those parts can not to sent as a rule that has not printed or be displayed 「—」 on the parts list.
2. The printed circuit board will be not sent as a rule.
3. ⚠ Parts are safety assurance parts. When replacing those parts, make sure to use to specified one.
4. All printed circuit boards and its assemblies are not available as service parts.

Area Suffix

C	Canada
J	U.S.A.
U	Other Areas
UB	Hong Kong
UF	China
US	Singapore
UT	Taiwan
B	U.K
E	Continental Europe
EN	Northan Europe
EE	Eastern Europe

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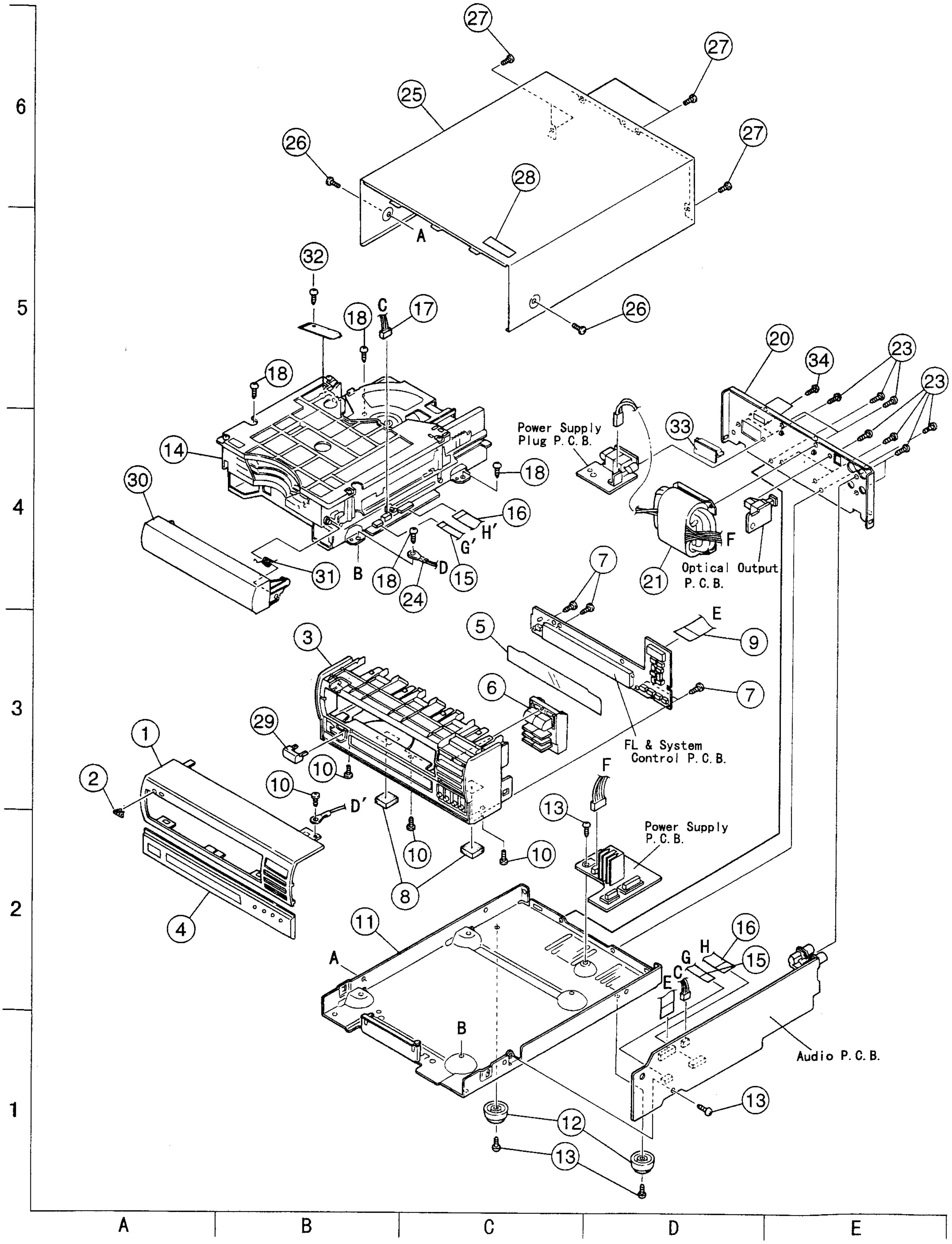
  FL & System Control P.C.B. ---------- 5- 8
  CD Servo P.C.B. ---------- 5- 9
Packing List ---------- 5- 11

General Exploded View and Parts List

Block No. M1MM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Power Supply Plug P. C. B.
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H'
G'
15
D
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F
Optical Output P. C. B.
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5
E
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FL & System Control P. C. B.
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D'
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13
F
Power Supply P. C. B.
4
11
A
16
H
G
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E
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B
Audio P. C. B.
13
12
13

■Parts List

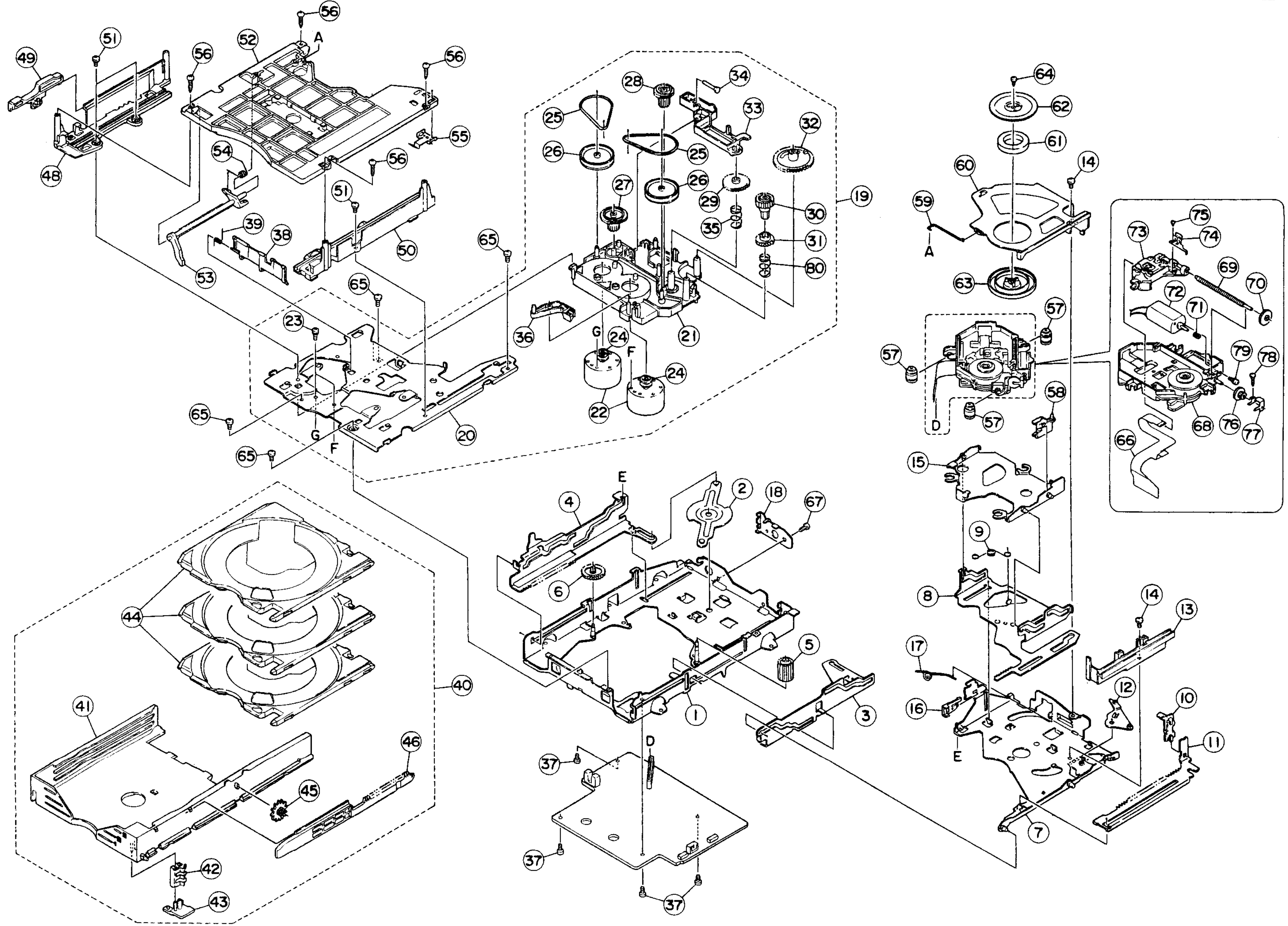
Block No. M1MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	LE20338-002A	FRONT PANEL	1		
	2	E406971-001SM	JVC MARK	1		
	3	LE10159-002A	FRONT BASE	1		
	4	LE30556-005A	WINDOW SCREEN	1		
	5	LE30550-002A	FL SCREEN	1		
	6	LE20340-002A	PUSH BUTTON	1		
	7	QYSDSF2608Z	SCREW	4		
	8	E75896-001	SPACER	2		
	9	VWF1214-12TTBX	FLAT WIRE	1	FC802	
	10	QYSDSG3006E	T.SCREW	4		
	11	LE10160-001A	CHASSIS BASE	1		
	12	E47227-029	FOOT	2		
	13	QYSBSG3008E	T.SCREW	4		
	14	------------	CD Mechanism	1	PF	
	15	VWF1007-08TTAX	FLAT WIRE	1	FC616	
	16	VWF1011-08TTAX	FLAT WIRE	1	FC615	
	17	EWS243-092	SOCKET WIRE	1	SC781	
	18	QYSBST3006E	TAP.SCREW	4		
	20	LE20342-006A	REAR PANEL	1		J
	20	LE20342-007A	REAR PANEL	1		C
	20	LE20342-008A	REAR PANEL	1		U UB UF US
	20	LE20342-009A	REAR PANEL	1		UT
	20	LE20342-010A	REAR PANEL	1		B E EN
	20	LE20342-016A	REAR PANEL	1		EE
	21	QQT0181-002	POWER TRANSFORMER	1	T101	J
	21	QQT0181-003	POWER TRANSFORMER	1	T101	B E EE EN
	21	QQT0181-004	POWER TRANSFORMER	1	T101	U UB UF US UT
	21	QQT0181-005	POWER TRANS	1	T101	C
	23	QYSBSGY3008E	SPECIAL SCREW	11		
	24	EWT025-009	TERMINAL WIRE	1		
	25	LE20334-002A	METAL COVER	1		
	26	QYSDSG3006N	T.SCREW	2		
	27	QYSBSGG3008E	T.SCREW	4		
	28	E67000-026	CAUTION LABEL	1		
	29	LE30547-001A	PLAY CAP	1		C J
	29	LE30547-002A	POWER CAP	1		B E EE EN U UB UF US UT
	30	LE20344-003A	CD FITTING	1		
	31	LE40352-001A	SPRING	1		
	32	QYSBSF3006Z	SCREW	1		C J
	33	LV40418-001A	SHIELD COVER	1		U UB UF US UT
	34	QYSBSG2608M	T.SCREW	2		U UB UF US UT

CD Mechanism Exploded View and Parts List

MODEL :QC3-S3YPM

Block No. M2MM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■CD Mechanism Parts List

Block No. M2MM

⚠	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	VKM3893-00B	CHASSIS ASS'Y	1		
	2	VKL7846-00BKP	CONTROL ARM ASS'Y	1		
	3	VKL2763-001	SLIDE CAM(L)	1		
	4	VKL2764-001	SLIDE CAM(R)	1		
	5	VKS3765-001	HOOK GEAR	1		
	6	VKS3766-001	POSITION GEAR	1		
	7	VKM3895-00CKP	LIFTER BASE ASS'Y	1		
	8	VKL2766-004	LIFTER	1		
	9	VKW5245-003	DIRECTION SPRING	1		
	10	VKS3767-001	HOOK	1		
	11	VKM3896-002KP	HOOK SLIDER	1		
	12	VKM3897-001	LOCK ARM	1		
	13	VKS3768-002KP	GUIDE RAIL	1		
	14	QYSDST2605Z	SCREW(M2.6 X 5)	2		
	15	VKM3898-00C	FLOATING BASE	1		
	16	VKS3769-001	TRAY HOLDER	1		
	17	VKW5250-002	LIFT SPRING	1		
	18	VKL7881-003KP	PROTECTOR	1		
	19	VKS2267-00EKP	ACTUATOR UNIT	1		
	20	VKL2768-001	TRAY BASE	1		
	21	VKS1162-001	ACTUATOR BASE	1		
	22	MSN5G257A	DC MOTOR	2		
	23	QYSPSPL2606Z	SCREW	2		
	24	VKS5548-001	MOTOR PULLEY	2		
	25	VKB3000-177	BELT	2		
	26	VKS5549-001	PULLEY GEAR	2		
	27	VKS5550-001	THIRD GEAR (C)	1		
	28	VKS5551-001	THIRD GEAR (T)	1		
	29	VKS5552-001	ELAVATOR GEAR	1		
	30	VKS5553-002KP	M.T GEAR	1		
	31	VKS5554-001	UP.DOWN GEAR	1		
	32	VKS3770-003KP	SWITCH GEAR	1		
	33	VKS2269-001	ELEVATOR ARM	1		
	34	VKH5783-001	ELEVATOR PIN	1		
	35	VKW5246-001	ELEVATOR SPRING	1		
	36	VKS3772-001	M.T DETECTOR	1		
	37	QYSDST2605Z	SCREW(M2.6 X 5)	4		
	38	VKS3773-001	LID PLATE	1		
	39	VKW5247-003	SPRING	1		
	40	VKS2270-00DKP	TRAY UNIT	1		
	41	VKS1157-002KP	DISC CASE	1		
	42	VKM3900-002KP	CLIC SPRING	1		
	43	VKS3774-001	SPRING COVER	1		
	44	VKS1158-003KP	SUB TRAY	3		
	45	VKS5555-001	PLANET GEAR	1		
	46	VKS3775-001	DOOR LEVER	1		
	48	VKS1159-001	TRAY GUIDE(L)	1		

■CD Mechanism Parts List

Block No. M2MM

⚠	Item	Parts Number	Parts Name	Q' ty	Description	Area
	49	VKS3777-001	SELECT SW	1		
	50	VKS1160-001	TRAY GUIDE(R)	1		
	51	QYSDST2605Z	SCREW(M2.6 X 5)	3		
	52	VKS1163-003	TOP COVER	1		
	53	VKS3778-001	SELECTOR	1		
	54	VKW5248-001	SELECTOR SPRING	1		
	55	VKM3901-001	CLICK SPRING	1		
	56	QYSBSF2608Z	SCREW(M2.6 X 8)	4		
	57	VKZ4791-001	INSULATOR	3		
	58	VKS3779-001	STOPPER	1		
	59	VKW5249-001	ROD	1		
	60	VKL2769-003KP	CLAMPER BASE	1		
	61	VYH7313-003	MAGNET	1		
	62	VKL7757-001	YOKE PLATE	1		
	63	VKS3780-002KP	CLAMPER	1		
	64	QYSPSF2604Z	SCREW	1		
	65	QYSDST2605Z	SCREW(M2.6 X 5)	4		
	66	VMW3699-001	F.P.C.	1		
	67	QYSDST2605Z	SCREW(M2.6 X 5)	1		
	68	VKS1161-002	T.MECHA CHASSIS	1		
	69	VKZ4781-001	SCREW SHAFT	1		
	70	VKS5556-001	FEED GEAR	1		
	71	VKS5557-001	LOADING GEAR	1		
	72	PPN-13KA10C	DC MOTOR	1		
	73	OPTIMA-610B1	CD PICK UP UNIT	1		
	74	VKM3903-001	RACK ARM	1		
	75	QYSPSPT1714M	SCREW(M1.7 X 1.4)	2		
	76	VKS5558-001	MIDDLE GEAR	1		
	77	VKM3904-001	SHAFT HOLDER	1		
	78	VKZ4248-206	ASS'Y SCREW	1		
	79	QYSPSPL2004Z	SCREW	1		
	80	VKW5314-001	UP DOWN SPRING	1		

■Electrical Parts List(Power Supply &Audio P.C.B.)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC101	BA41W12ST-V5	I.C(M)	
	IC111	NJM78L12A-T	I.C.	
	IC112	NJM79L12A-T	I.C.	
	IC121	NJM78L05A-T	I.C.	
	IC301	NJM5532D	I.C	
		DIODES		
	D101	11E2-T5	SILICON	
	D102	11E2-T5	SILICON	
	D103	11E2-T5	SILICON	
	D104	11E2-T5	SILICON	
	D111	11E2-T5	SILICON	
	D112	11E2-T5	SILICON	
	D131	11E2-T5	SILICON	
	D132	MTZJ30B-T2	ZENER	
	D361	1SS133-T2	SI.DIODE	
	D362	1SS133-T2	SI.DIODE	
	D363	1SS133-T2	SI.DIODE	
	D411	1SS133-T2	SI.DIODE	
	D412	1SS133-T2	SI.DIODE	
		TRANSISTORS		
	Q101	DTA114YS	DIGITAL TRANSISTOR	
	Q131	2SA934/QR/-T	SILICON	
	Q353	2SD1302/ST/-T	SILICON	
	Q354	2SD1302/ST/-T	SILICON	
	Q361	2SA933S/RS/-T	SILICON	
	Q362	DTC114YS	DIGITAL TRANSISTOR	
	Q411	DTC114YS	DIGITAL TRANSISTOR	
	Q412	DTA114YS	DIGITAL TRANSISTOR	
		CAPACITORS		
	C101	QETM1CM-688	6800MF 16V ELECTRO	BCEEENJ
	C101	QETM1EM-688	6800MF 25V AL E.CAP.	UUBUFUSUT
	C102	QFVJ1HJ-334Z	0.33MF 50V T.FILM	
	C105	QTE1C03-476Z	AL E.CAP.	
	C106	QTE1C03-476Z	AL E.CAP.	
	C107	QETC1EM-227ZN	220MF 25V AL E.CAP.	UUBUFUSUT
	C111	QETB1EM-477E	470MF 25V E.CAP.	
	C112	QETB1EM-477E	470MF 25V E.CAP.	
	C113	QTE1E06-476Z	AL E.CAP.	
	C114	QTE1E06-476Z	AL E.CAP.	
	C121	QETB1CM-477M	470MF 16V E.CAP.	BCEEENJ
	C121	QETM1EM-108	1000MF 25V ELECTRO	UUBUFUSUT
	C122	QETC1CM-227Z	220MF 16V AL E.CAP.	
	C123	QETM1EM-108	1000MF 25V ELECTRO	UUBUFUSUT
	C131	QETB1HM-107	100MF 50V E.CAP.	
	C132	QETB1HM-226E	22MF 50V E.CAP.	
	C133	QETB1HM-226E	22MF 50V E.CAP.	
	C134	QFVJ1HJ-103Z	0.01MF 50V T.FILM	
	C305	QFLB1HJ-472	4700PF 50V MYLAR CAP.	
	C306	QFLB1HJ-472	4700PF 50V MYLAR CAP.	
	C307	QFLB1HJ-821	820PF 50V MYLAR CAP.	
	C308	QFLB1HJ-821	820PF 50V MYLAR CAP.	
	C309	QTE1H28-106Z	E CAP.	
	C310	QTE1H28-106Z	E CAP.	
	C313	QCBB1HK-471Y	470PF 50V CER.CAP.	BEEEN
	C314	QCBB1HK-471Y	470PF 50V CER.CAP.	BEEEN
	C331	QETC1CM-227Z	220MF 16V AL E.CAP.	
	C332	QETB1EM-476	47MF 25V AL E.CAP.	
	C351	QDYB1CM-103Y	0.01MF 16V C CAP.	
	C361	QETB1EM-226N	22MF 25V E.CAP.	
	C362	QETC1EM-227ZN	220MF 25V AL E.CAP.	
	C411	QCBB1HK-331Y	330PF 50V CER.CAP.	
	C501	QCSB1HJ-470	47PF 50V CER.CAP.	
	C511	QETC1AM-107ZN	100MF 10V E.CAP.	
	C998	QCF31HZ-223Z	0.022MF 50V CERAMIC	
	C999	QCF31HZ-223Z	0.022MF 50V CERAMIC	
		RESISTORS		
	R111	QRJ146J-1R0X	1 1/4W UNF.CARBON R	
	R131	QRE141J-122Y	1.2K 1/4W R.NETWORK	
	R133	QRE141J-151Y	150 1/4W R.NETWORK	
	R134	QRE141J-473Y	47K 1/4W R.NETWORK	
	R135	QRJ146J-122X	1.2K 1/4W UNF.CARBON R	
	R143	QRE141J-122Y	1.2K 1/4W R.NETWORK	
	R144	QRE141J-122Y	1.2K 1/4W R.NETWORK	
	R149	QRJ146J-4R7X	4.7 1/4W R.NETWORK	
	R150	QRJ146J-4R7X	4.7 1/4W R.NETWORK	
	R305	QRA14CF-2201Y	2.2K 1/4W R.NETWORK	
	R306	QRA14CF-2201Y	2.2K 1/4W R.NETWORK	
	R307	QRA14CF-2201Y	2.2K 1/4W R.NETWORK	
	R308	QRA14CF-2201Y	2.2K 1/4W R.NETWORK	
	R321	QRE141J-221Y	220 1/4W R.NETWORK	
	R322	QRE141J-221Y	220 1/4W R.NETWORK	
	R323	QRA14CF-1003Y	100K 1/4W R.NETWORK	
	R324	QRA14CF-1003Y	100K 1/4W R.NETWORK	
	R333	QRJ146J-221X	220 1/4W R.NETWORK	
	R334	QRJ146J-221X	220 1/4W R.NETWORK	
	R353	QRE141J-103Y	10K 1/4W R.NETWORK	
	R354	QRE141J-103Y	10K 1/4W R.NETWORK	
	R355	QRE141J-684Y	680K 1/4W R.NETWORK	
	R356	QRE141J-473Y	47K 1/4W R.NETWORK	
	R361	QRE141J-822Y	8.2K 1/4W R.NETWORK	
	R362	QRE141J-683Y	68K 1/4W R.NETWORK	
	R363	QRE141J-221Y	220 1/4W R.NETWORK	
	R364	QRE141J-221Y	220 1/4W R.NETWORK	
	R365	QRE141J-221Y	220 1/4W R.NETWORK	
	R411	QRE141J-472Y	4.7K 1/4W R.NETWORK	
	R501	QRE141J-221Y	220 1/4W R.NETWORK	
	R502	QRE141J-221Y	220 1/4W R.NETWORK	
	R503	QRE141J-101Y	100 1/4W R.NETWORK	
	R511	QRE141J-102Y	1K 1/4W R.NETWORK	
	R512	QRE141J-2R2Y	2.2 1/4W R.NETWORK	
	R513	QRE141J-182Y	1.8K 1/4W R.NETWORK	
	R999	QRE141J-102Y	1K 1/4W R.NETWORK	CJ
		OTHERS		
		EMW10734-102	PRINTED BOARD	
		QYSBSG3008E	T.SCREW	
	J701	GP1F32T	OPTICAL JACK	
	J702	QNS0016-001	3.5 JACK	
	J703	QNN0172-001	PIN JACK	
	J901	QGA7901C1-02	CONNECTOR	BCEEENJ
	J901	QGA7901C1-03	CONNECTOR	UUBUFUSUT
	J902	QNC0030-001	AC SOCKET	BEEENUUBUFUSUT
	J902	QNC0052-001	AC INLET	CJ
	K501	QQR0601-001Z	F.BEADS I.M	
	S101	QSW0513-001	SLIDE SW.	UUBUFUSUT
	CN801	QGA2501C1-07	7P CONNECTOR	
	CN802	QGF1207F1-14	CONNECTOR	
	CN803	QGA2501F1-03	CONNECTOR	
	CN804	QGF1016C1-11	CONNECTOR	
	CN805	QGF1016C1-07	CONNECTOR	
	CN806	QGD2501C1-03Z	SOCKET I.M	
	CN810	QGB2510J1-07	CONNECTOR	
	CN811	QGB2510J1-05	CONNECTOR	
	CN820	QGB2510K2-07	CONNECTOR	
	CN821	QGB2510K2-05	CONNECTOR	
	EP001	QNZ0136-001Z	IM EARTH PLATE	
	EP002	QNZ0136-001Z	IM EARTH PLATE	
	FS101	E3400-431	FELT SPACER	
	FW806	EWR33B-08LST	FLAT WIRE	
	HS001	LV40057-H30B	HEAT SINK	

■Electrical Parts List(FL & System Control P.C.B.)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC201	MN173222JABD1	I.C(M)	
	IC241	IC-PST591M/E/-X	I.C(M)	
		DIODES		
	D201	1SS355-X	SI.DIODE	
	D202	1SS355-X	SI.DIODE	
	D203	1SS355-X	SI.DIODE	
	D204	1SS355-X	SI.DIODE	
	D221	SLR-342VC-T	L.E.D.	
		TRANSISTORS		
	Q221	DTC114YKA-X	DIGITAL TRANSISTOR	
		CAPACITORS		
	C201	NCF21CZ-105X	1MF 16V C CAP.	
	C204	NEA21HM-335NZM	3.3MF 50V E.CAP.	
	C210	NEA21HM-335NZM	3.3MF 50V E.CAP.	
	C211	NEA21HM-335NZM	3.3MF 50V E.CAP.	
	C221	NCS31HJ-101X	100PF 50V C.CAPA. C.M	
	C222	NCS31HJ-101X	100PF 50V C.CAPA. C.M	
	C241	NCS31HJ-102X	1000PF 50V C.CAPA. C.M.	
		RESISTORS		
	R201	NRSA63J-105X	MG RES.	
	R202	NRSA63J-102X	RES. C.M	
	R204	NRSA63J-102X	RES. C.M	
	R205	NRSA63J-221X	MG RES.	
	R206	NRSA63J-221X	MG RES.	
	R207	NRSA63J-221X	MG RES.	
	R208	NRSA63J-221X	MG RES.	
	R209	NRSA63J-221X	MG RES.	
	R221	NRSA63J-471X	RES. C.M	
	R222	NRSA63J-471X	RES. C.M	
	R231	NRSA63J-104X	RES. C.M	
	R232	NRSA63J-104X	RES. C.M	
	R233	NRSA63J-104X	RES. C.M	
	R234	NRSA63J-104X	RES. C.M	
	R241	NRSA63J-104X	RES. C.M	
		OTHERS		
		EMW10735-002	PRINTED BOARD	
	S201	NSW0062-001X	TACT SWITCH	
	S202	NSW0062-001X	TACT SWITCH	
	S203	NSW0062-001X	TACT SWITCH	
	S204	NSW0062-001X	TACT SWITCH	
	S205	NSW0062-001X	TACT SWITCH	
	S206	NSW0062-001X	TACT SWITCH	
	S207	NSW0062-001X	TACT SWITCH	
	S208	NSW0062-001X	TACT SWITCH	
	S209	NSW0062-001X	TACT SWITCH	
	S210	NSW0062-001X	TACT SWITCH	
	S211	NSW0062-001X	TACT SWITCH	
	S212	NSW0062-001X	TACT SWITCH	
	S213	NSW0062-001X	TACT SWITCH	
	X201	NAX0192-001X	CRYSTAL	
	CN201	QGF1210G1-14	CONNECTOR	
	DI201	QLF0030-002	FLUORESCENT DISPLAY TUBE	
	FH201	LE30640-001A	FL HOLDER	
	FH202	LE30640-002A	FL HOLDER	
	FS201	E3400-431	FELT SPACER	
	FS202	E3400-431	FELT SPACER	

■Electric PartsList(CD Servo P.C.B.)

⚠	Item	Parts Number	Description	Area
		I.C.S		
	IC601	AN8806SB	I.C	
	IC641	BA6897FPW	I.C	
	IC651	MN35510	I.C	
	IC681	MN150837J8R3	I.C	
	IC691	LB1641	I.C	
	IC692	LB1641	I.C	
		DIODES		
	D670	MA152WA-TX	DIODE	
	D671	MA152WA-TX	DIODE	
		TRANSISTORS		
	Q601	2SA1037K(R)	SI.TRANSISTOR	
	Q631	2SA952(L,K)	SI.TRANSISTOR	
		CAPACITORS		
	C602	NCS21HJ-5R0	5PF 50V C.CAPACITOR	
	C604	QEKF0JM-107Z	100MF 6.3V E.CAPACITOR	
	C605	QEK41CM-106	10MF 16V E.CAPACITOR	
	C607	NCB21HK-822AY	8200PF 50V C.CAPACITOR	
	C608	QEKJ1HM-105Z	1MF 50V D.CAPACITOR	
	C609	NCS21HJ-101X	100PF 50V C.CAPACITOR	
	C610	NCB21HK-273AY	0.027MF 50V C.CAPACITOR	
	C611	NCB21HK-472AY	4700PF 50V C.CAPACITOR	
	C612	NCB21HK-103AY	0.01MF 50V C.CAPACITOR	
	C613	NCS21HJ-331AY	330PF 50V C.CAPACITOR	
	C614	NCB21EK-104AYU	0.1MF 25V C.CAPACITOR	
	C615	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C616	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C617	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C618	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C619	NCS21HJ-271AY	270PF 50V C.CAPACITOR	
	C620	NCS21HJ-151X	150PF 50V C.CAPACITOR	
	C621	NCB21HK-102AY	1000PF 50V C.CAPACITOR	
	C622	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C623	NCB21EK-104AYU	0.1MF 25V C.CAPACITOR	
	C628	NCB21HK-473AY	0.047MF 50V C.CAPACITOR	
	C629	QEKF0JM-107Z	100MF 6.3V E.CAPACITOR	
	C631	QEKJ1AM-107ZM	100MF 10V E.CAPACITOR	
	C632	NCB21HK-473AY	0.047MF 50V C.CAPACITOR	
	C633	NCB21HK-222AY	2200PF 50V C.CAPACITOR	
	C634	NCB21HK-222AY	2200PF 50V C.CAPACITOR	
	C651	NCS21HJ-120AY	12PF 50V C.CAPACITOR	
	C652	NCS21HJ-150AY	15PF 50V C.CAPACITOR	
	C653	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C654	NCS21HJ-6R0AY	6PF 50V C.CAPACITOR	
	C655	NCB21HK-473AY	0.047MF 50V C.CAPACITOR	
	C657	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C658	QEKF0JM-107Z	100MF 6.3V E.CAPACITOR	
	C659	QEKF0JM-107Z	100MF 6.3V E.CAPACITOR	
	C661	NCS21HJ-471AY	470PF 50V C.CAPACITOR	
	C662	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C663	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C664	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C665	NCB21EK-104AYU	0.1MF 25V C.CAPACITOR	
	C666	QEKJ0JM-227Z	220MF 6.3V E.CAPACITOR	
	C671	NCB21HK-222AY	2200PF 50V C.CAPACITOR	
	C672	NCB21HK-222AY	2200PF 50V C.CAPACITOR	
	C673	QEK40JM-227	220MF 6.3V E.CAPACITOR	
	C674	NCB21HK-223AY	0.022MF 50V C.CAPACITOR	
	C675	NCB21EK-104AYU	0.1MF 25V C.CAPACITOR	
	C676	NCB21EK-104AYU	0.1MF 25V C.CAPACITOR	
	C681	QEK40JM-227	220MF 6.3V E.CAPACITOR	
	C687	NCB21EK-104AYU	0.1MF 25V C.CAPACITOR	
	C688	NCB21EK-104AYU	0.1MF 25V C.CAPACITOR	
	C691	NCB21HK-103AY	0.01MF 50V C.CAPACITOR	
	C692	NCB21HK-103AY	0.01MF 50V C.CAPACITOR	
	C693	VCP0012-105Z	1MF C.CAPACITOR	
	C694	VCP0012-105Z	1MF C.CAPACITOR	
	C695	QEK41CM-106	10MF 16V E.CAPACITOR	
		RESISTORS		
	R601	NRSA02J-123NY	MG RESISITOR	
	R602	NRSA02J-102NY	MG RESISITOR	
	R603	NRSA02J-125NY	MG RESISITOR	
	R605	NRSA02J-274NY	MG RESISITOR	
	R606	NRSA02J-104NY	MG RESISITOR	
	R607	NRSA02J-223NY	MG RESISITOR	
	R608	NRSA02J-124NY	MG RESISITOR	
	R609	NRSA02J-393NY	MG RESISITOR	
	R610	NRSA02J-104NY	MG RESISITOR	
	R612	NRSA02J-822NY	MG RESISITOR	
	R613	NRSA02J-121NY	MG RESISITOR	
	R614	NRSA02J-100NY	MG RESISITOR	
	R615	NRSA02J-120NY	MG RESISITOR	
	R616	NRSA02J-910NY	MG RESISITOR	
	R617	NRSA02J-473NY	MG RESISITOR	
	R618	NRSA02J-473NY	MG RESISITOR	
	R619	NRSA02J-473NY	MG RESISITOR	
	R620	NRSA02J-473NY	MG RESISITOR	
	R621	NRSA02J-101NY	MG RESISITOR	
	R622	NRSA02J-101NY	MG RESISITOR	
	R623	NRSA02J-101NY	MG RESISITOR	
	R624	NRSA02J-101NY	MG RESISITOR	
	R625	NRSA02J-823NY	MG RESISITOR	
	R626	NRSA02J-823NY	MG RESISITOR	
	R631	NRSA02J-331NY	MG RESISITOR	
	R633	NRSA02J-273NY	MG RESISITOR	
	R641	NRSA02J-104NY	MG RESISITOR	
	R642	NRSA02J-682NY	MG RESISITOR	
	R643	NRSA02J-183NY	MG RESISITOR	
	R644	NRSA02J-223NY	MG RESISITOR	
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	R664	NRSA02J-471NY	MG RESISITOR	
	R665	NRSA02J-102NY	MG RESISITOR	
	R666	NRSA02J-472NY	MG RESISITOR	
	R667	NRSA02J-472NY	MG RESISITOR	
	R668	NRSA02J-472NY	MG RESISITOR	
	R669	NRSA02J-472NY	MG RESISITOR	
	R670	NRSA02J-470NY	MG RESISITOR	
	R671	NRSA02J-102NY	MG RESISITOR	
	R672	NRSA02J-102NY	MG RESISITOR	
	R673	NRSA02J-100NY	MG RESISITOR	
	R674	NRSA02J-102NY	MG RESISITOR	
	R675	NRSA02J-104NY	MG RESISITOR	
	R676	NRSA02J-104NY	MG RESISITOR	
	R681	NRSA02J-223NY	MG RESISITOR	
	R682	NRSA02J-223NY	MG RESISITOR	
	R683	NRSA02J-223NY	MG RESISITOR	

■Electric PartsList(CD Servo P.C.B.)

⚠	Item	Parts Number	Description	Area
	R684	NRSA02J-223NY	MG RESISITOR	
	R685	NRSA02J-223NY	MG RESISITOR	
	R686	NRSA02J-223NY	MG RESISITOR	
	R687	NRSA02J-223NY	MG RESISITOR	
	R688	NRSA02J-102NY	MG RESISITOR	
	R691	NRSA02J-223NY	MG RESISITOR	
	R692	NRSA02J-223NY	MG RESISITOR	
	R693	NRSA02J-223NY	MG RESISITOR	
	R694	NRSA02J-223NY	MG RESISITOR	
	R695	NRSA02J-103NY	MG RESISITOR	
	R696	NRSA02J-181NY	MG RESISITOR	
		OTHERS		
		VSH1173-001	SWITCH	
		EMV7169-006R	CONNECT TERMINAL	
	B601	NRSA02J-0RONY	MG RESISITOR	
	B602	NRSA02J-0RONY	MG RESISITOR	
	B603	NRSA02J-0RONY	MG RESISITOR	
	B604	NRSA02J-0RONY	MG RESISITOR	
	B605	NRSA02J-0RONY	MG RESISITOR	
	B606	NRSA02J-0RONY	MG RESISITOR	
	B607	NRSA02J-0RONY	MG RESISITOR	
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	B615	NRSA02J-0RONY	MG RESISITOR	
	B616	NRSA02J-0RONY	MG RESISITOR	
	B617	NRSA02J-0RONY	MG RESISITOR	
	L691	VQP0033-100Z	INDUCTOR	
	L692	VQP0033-100Z	INDUCTOR	
	S691	QSW0449-001	SWITCH	
	S692	QSW0449-001	SWITCH	
	S693	ESS1200-002	SWITCH	
	X651	VCX5016-934V	CRYSTAL	
	X681	EFO-EC4004T4	CER. RESONATOR	
	Z651	VYH7237-003	IC HOLDER	
	Z681	VYH7237-001SS	IC HOLDER	
	CN601	VMC0332-023	CONNECTOR	
	CN604	VMC0040-003	CONNECTOR	
	CN605	EMV7171-111R	CONNECTOR	
	CN606	EMV7171-107R	CONNECTOR	
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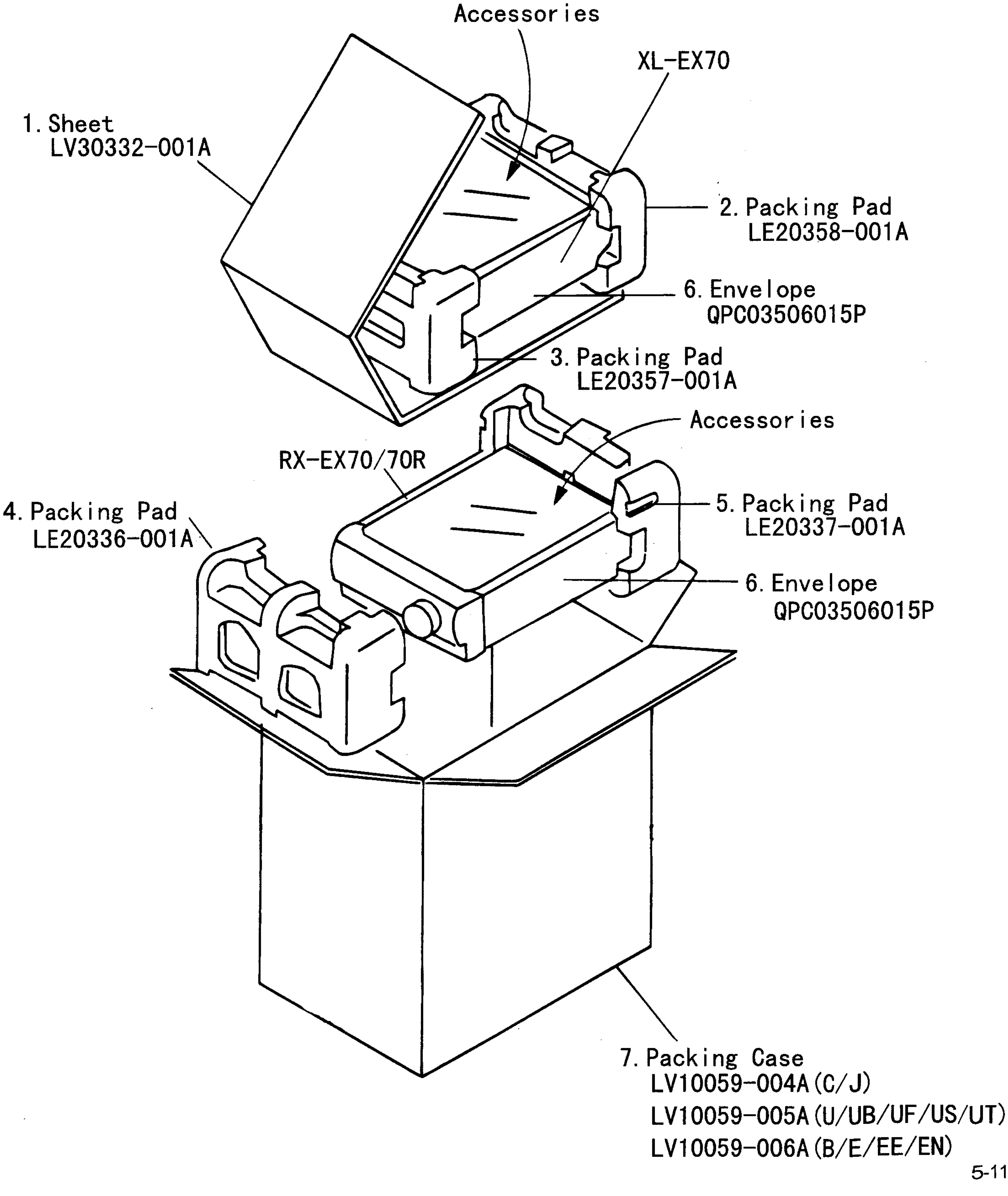
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LE20357-001A
Accessories
RX-EX70/70R
4. Packing Pad
LE20336-001A
5. Packing Pad
LE20337-001A
6. Envelope
QPC03506015P
7. Packing Case
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LV10059-005A(U/UB/UF/US/UT)
LV10059-006A(B/E/EE/EN)

■ SP-EX70

Packing Materials and Accessories List

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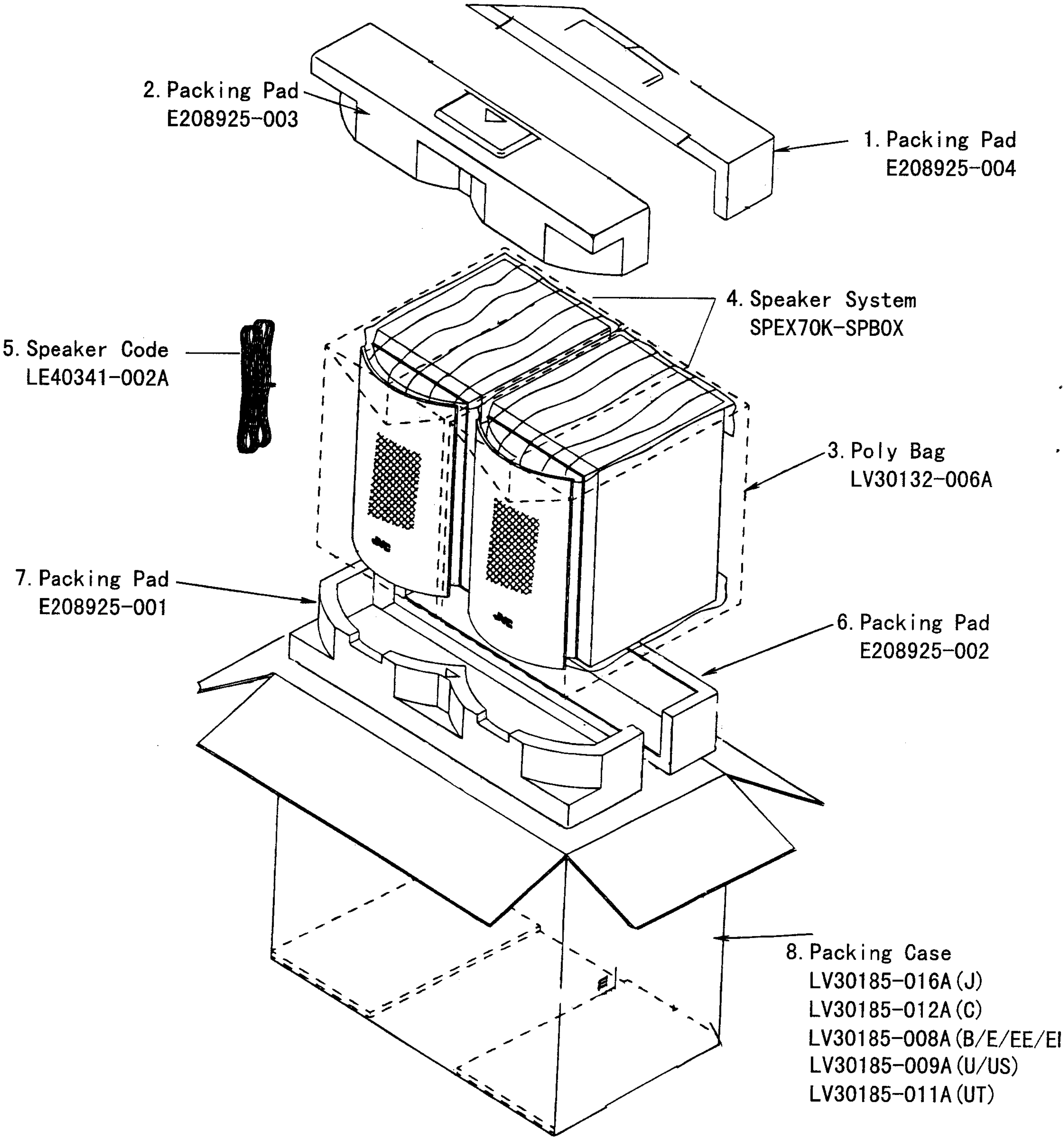
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LV30132-006A
7. Packing Pad
E208925-001
6. Packing Pad
E208925-002
8. Packing Case
LV30185-016A (J)
LV30185-012A (C)
LV30185-008A (B/E/EE/EI
LV30185-009A (U/US)
LV30185-011A (UT)

■ CA-EX70(J)/SP-EX70(J)

Packing Materials and Accessories List

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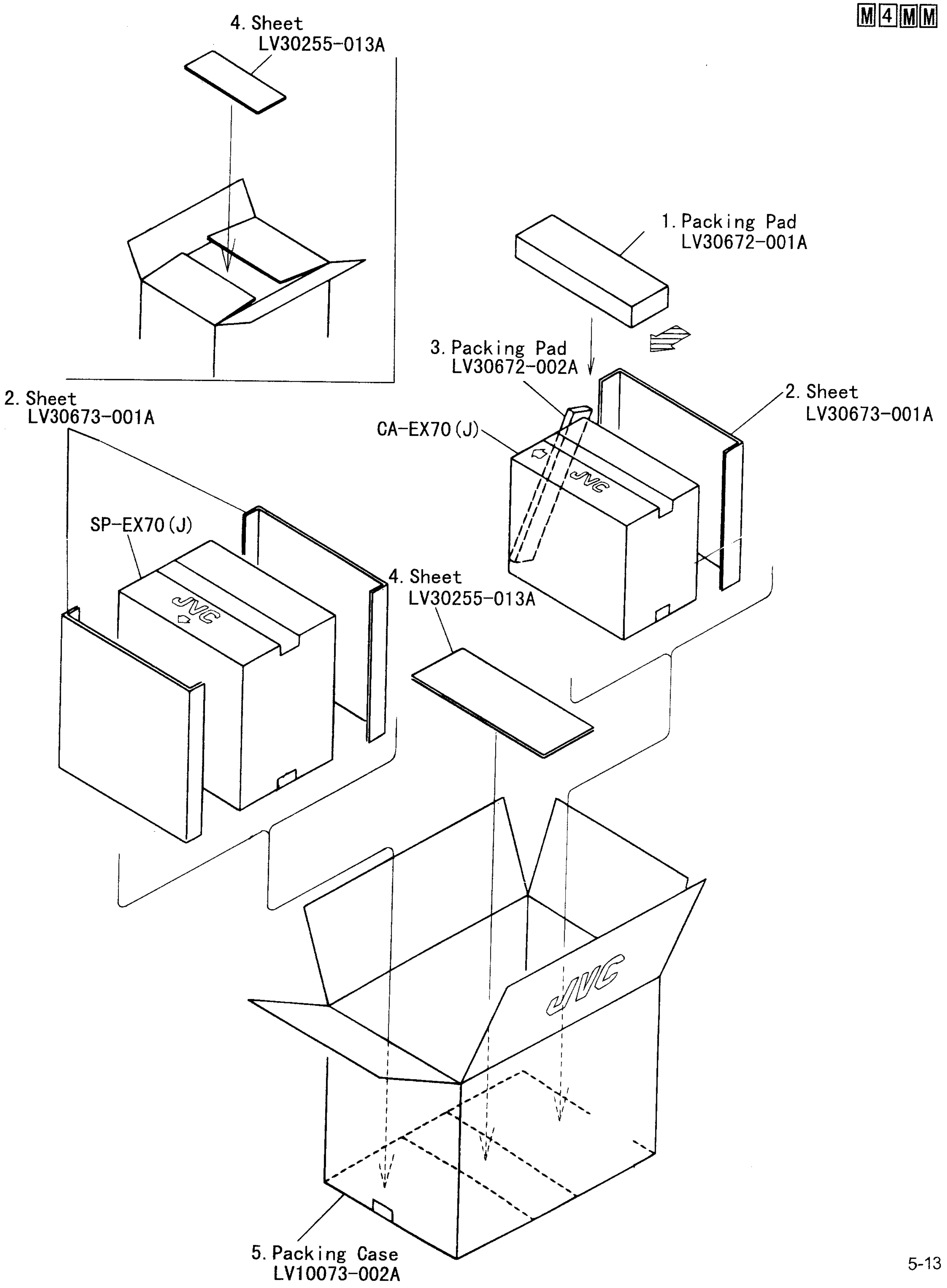
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SP-EX70(J)
4. Sheet
LV30255-013A
5. Packing Case
LV10073-002A